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**The Impact of Dutch Cartesian Medical Reformers
in Early Enlightenment German Culture
(1680-1720)**

Anette Henriette Munt

University College London

Thesis submitted for the degree of PhD, University of London, 2004



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Abstract

This study analyses the reception and influence of Dutch Cartesian medical reformers in German culture during the Early Enlightenment period. The impact of their proposed reforms, involving the rejection of traditional Galenic-Aristotelian theory and practice, and placing medicine in an essentially new, mechanistic science-oriented Cartesian philosophical framework, is discussed in the context of the large number of German translations of their works, published often in several editions in various parts of Germany between the late 1680s and the early eighteenth century, and in relation to the wider context of social and cultural reform.

The study opens with an examination of factors that facilitated the reception of Dutch medical ideas in Germany, such as the large number of German medical students studying in the Netherlands, the preponderant impact of the Dutch universities in the promotion of the 'new' philosophy and science during the second half of the seventeenth and early eighteenth century, and the presence of physicians trained in the Dutch universities at the medical faculties of German Protestant universities, and as court, city, and army physicians. Supporting evidence is also drawn from the massive impact of Dutch publishing on the German book market, the proliferation of periodicals, book reviews and book production in Germany aimed at the general public in the vernacular.

It is argued that the translated works of Cornelis Bontekoe, Steven Blankaart, Heidentryk Overkamp and their Cartesian followers intensified debates about medical theory and practice and the new life-style issues of tea and coffee drinking and tobacco-smoking and considerably influenced their adoption in society. The concerns voiced by translators and influential German medical scholars, including Friedrich Hoffmann, Georg Ernst Stahl and Albrecht von Haller, show that their iatrochemical mechanist conception of how to preserve health, prevent illness and prolong life, and their advocacy of a virtual abolition of blood-letting and purging, contributed to a change in people's perceptions of illness and attitudes to health care in some sections of society, and exerted a far greater impact on German medicine than has so far been recognized.

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Abbreviations

<i>ADB</i>	<i>Allgemeine Deutsche Biographie</i>
<i>AE</i>	<i>Acta Eruditorum (Acta Lipsiensia)</i> (1682 -1731)
<i>HBL</i> 1 st	A. Hirsch, <i>Biographisches Lexicon der hervorragenden Aerzte aller Zeiten und Völker</i> , 1 st edn., 6 vols., 1884-88])
<i>HBL</i> 2 nd	A. Hirsch, <i>Biographisches Lexicon der hervorragenden Aerzte aller Zeiten und Völker</i> , 6 vols., 2 nd enlarged edn. by Haberling-Hübotter-Vierordt (1929-1934)
<i>JdS</i>	<i>Journal des Savans</i> (1680-1750)
<i>NNBW</i>	<i>Nieuw Nederlandsch Biographisch Woordenboek</i> , eds. P. C. Molhuysen, P. J. Blok et al, 10 vols. (1911-37)
<i>TGGNWT</i>	<i>Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek</i>

The primary texts used in this thesis have been consulted in their original languages and/or in German translation. For the sake of readability, and on account of the word limit, most quotations from Dutch and German are given in English only, translated by myself. It has afforded me great pleasure to be as true to the original, and as accurate and concise as my abilities allowed; with the small number of translations from Latin, Italian, and Spanish I received help. Where seventeenth and eighteenth century English translations are available these have been used. In a few cases, where appropriate, quotations are cited both in the original and in English. To show the range and number of publications of Bontekoe, Blankaart, Overkamp, Muys, Daelmans, Heinsius and Gehema, I have, wherever relevant to the discussion, cited all the editions of their works I have been able to locate in book- and library catalogues but have included in the bibliography only those I have actually read.

Introduction

Between the 1680s and the early eighteenth century a strikingly large number of Dutch Cartesian medical works were published in German translation, often in several editions, in various parts of Germany. Arguably, this constitutes a significant manifestation of Dutch cultural influence, at any rate in Protestant Germany, during the Early Enlightenment. The evidence of the debates triggered by this literature in contemporary German journals and vernacular literature suggests this development not only had a substantial impact on the medical thought of the period, and on popular ideas about medicine and lifestyle, but led to the adoption in some quarters of notable changes in medical practice.

In general, most attention on Enlightenment medical ‘reform’ and development in Germany, both in the English and German secondary literature, has focused on the middle and later eighteenth century, viewing any Enlightenment impact as a feature of the decades after 1750 and, in considerable part, the result of government regulations and initiatives.¹ A major strand among recent studies of eighteenth century German medical history, reflecting the wider social ‘revisionism’ in Enlightenment studies more generally, places practically no emphasis on new intellectual influences as an engine of ‘enlightened reforms’, or factor significantly reshaping medical discourse and practice. It is definitely no longer fashionable to pursue an ‘internalist’ medical perspective with emphasis on ‘biographies, bibliographies, medical theory and practice’ in which ‘great men’ and ‘great ideas’ dominate. Research into the social context of medicine, from the patient’s perspective, has, from the 1960s and 1970s onward, become the preferred approach.² Revaluation of the influence of the ‘medical market place’ and role of ‘itinerant practitioners, empirics and quacks’ in early modern society, though valid in itself,

¹ Thomas Broman, *The transformation of German academic medicine 1750-1820* (1996); Annet Mooij, *De polsslag van de stad, 350 jaar academische geneeskunde in Amsterdam* (1999) 58, 120-21; Mary Lindemann, *Health and Healing in Eighteenth-Century Germany* (1996) 65-73.

² Mary Lindemann, *Medicine and Society in Early Modern Europe* (1999) 2-5; Roy Porter, ‘The patient’s view, Doing medical history from below’, in *Theory and Society* XIV (1985) 175-98.

runs the risk, however, as Willem Frijhoff points out, of introducing ‘new biases’ into medical historiography by implying that ‘because of their popularity’ (i.e. catering to large sections of the population) commonly received ideas had as much, or greater, validity than academic training and that ‘empiricism and quackery really were more efficient than learned medicine’.³

No doubt, ‘learned medicine’ was based on theories in many respects detached from actual reality. Nevertheless, since Harvey’s discovery of the blood circulation and Descartes’ advocacy of a mechanistic world view from the second quarter of the seventeenth century onwards, medical doctrine had to grapple with, and adjust to, important new discoveries and research-based theories in ‘natural philosophy’ which ultimately filtered through to medical practice and therapeutics to a greater extent, I will argue, than is generally admitted in recent literature. Hence there are good grounds, given that the most decisive scientific and mathematical, as well as cultural and intellectual impulses shaping the German Enlightenment began in the era of Samuel Pufendorf (1632-94), Gottfried Wilhelm Leibniz (1646-1716), Christian Thomasius (1655-1728), Ehrenfried Walther von Tschirnhaus (1651-1708), and Christian Wolff (1679-1754),⁴ for re-evaluating the impact of philosophically based influences on medical as on other reform initiatives in the pre-1750 period.

During recent decades there has been a markedly increased interest in the German Early Enlightenment, notably in the work of authors such as Winfried Schröder, Martin Pott, Michael Albrecht, Ulrich Johannes Schneider, J. B. Schneewind, Ian Hunter, Martin Mulsow, and Jonathan Israel.⁵ Israel, in *Radical*

³ Willem Frijhoff, ‘Medical education and early modern Dutch medical practitioners: towards a critical approach’, in Hilary Marland and Margaret Pelling (eds.), *The Task of Healing, Medicine, religion and gender in England and the Netherlands 1450-1800* (1996) 205-20, here 205-6.

⁴ John Gagliardo, *Germany under the Old Regime 1600-1790* (1991) 218-30; Detlev Pätzhold, *Spinoza-Aufklärung-Idealismus. Die Substanz der Moderne*, 2nd enlarged edn. (2002 [1995]) 64-79.

⁵ Among their major works are, Winfried Schröder, *Spinoza in der deutschen Frühaufklärung* (1987); Martin Pott, *Aufklärung und Aberglaube, Die deutsche Frühaufklärung im Spiegel ihrer Aberglaubenskritik* (1992); Michael Albrecht, *Eklektik, Eine Begriffsgeschichte mit Hinweisen auf die Philosophie- und Wissenschaftsgeschichte* (1994); Ulrich Johannes Schneider, ‘Eclecticism and the History of Philosophy’, in Donald R. Kelly, *History and the Disciplines, The Reclassification of Knowledge in Early Modern Europe* (1997) 83-101; J. B. Schneewind, *The invention of autonomy, A history of modern moral philosophy* (1998); Ian Hunter, *Rival Enlightenments, Civil and Metaphysical Philosophy in Early Modern Germany* (2001); Martin Mulsow, *Moderne aus dem Untergrund* (2002); Jonathan I. Israel, *Radical Enlightenment, Philosophy and the Making of Modernity 1650-1750* (2001).

Enlightenment, argues that from the 1650s ‘new ideas were rapidly transforming attitudes and beliefs throughout society’ and that this had a very wide cultural impact.⁶ Discussion of ‘science’, or what contemporaries called ‘natural philosophy’, was a crucial part of this intellectual campaign, and although modern historians have frequently disagreed about the nature and concept of the ‘scientific revolution’ and so-called ‘medical revolution’ supposedly taking place at that time,⁷ there are strong grounds for arguing there *was* ‘real discontinuity’, resulting in a ‘rejection of the classical scientific legacy, the expectation that science can, must and will progress beyond that of Antiquity, and the actual victory of radically new scientific theories’.⁸

The ‘important and widespread involvement of early modern physicians with the new philosophy’ has now been acknowledged as not only theoretical but one that produced ‘crucial changes in learned physic, perhaps even of a “revolutionary” nature’.⁹ Whereas post-war proponents of the scientific revolution largely ignored the contributions of early modern physicians and empirical medical practitioners to science and portrayed most of medicine as ‘remaining mired in prerational Galenic humoralism or Paracelsian magic’,¹⁰ in recent decades the older framework has been considerably revised. Harold Cook and other medical historians have demonstrated that the mechanical-mathematical ‘new philosophy’ with its emphasis on natural

⁶ Israel, *Radical Enlightenment*, 6.

⁷ See, for example, Steven Shapin, *The Scientific Revolution* (1996) 1-14; The notion of the Scientific Revolution as a decisive development, laying the basis for the modern world, was, as several recent scholars have emphasized, a conception ‘invented’ and popularized in the 1930s by historians of science with an ‘internalist, progressivist approach’ who argued that ‘a small, closed seminar of great minds’ initiated a fundamental intellectual transformation in Europe. That this intellectual movement now extends to nearly five centuries, it has been argued, ‘makes the term evolution seem a far more appropriate definition’, and its former chronological placement in the sixteenth and seventeenth centuries no longer viable. Contextualist’ histories of early modern science, such as David C. Lindberg and Robert S. Westman (eds.), *Reappraisals of the Scientific Revolution* (1990), which incorporate formerly excluded natural history, the universities and medicine, but accord only marginal importance to religion, economics, politics, technology and the practical arts, are said to be ‘still very much rooted in the “internalist” tradition’, and indicate ‘the need to abandon the Scientific Revolution’. See Ole Peter Grell, ‘Protestantism, Natural Philosophy, and the Scientific Revolution’ (Review Article), in *Studies in the History and Philosophy of Science* XXIII, 3 (1992) 519-27, here 520-5.

⁸ Roy Porter, ‘The Scientific Revolution and Universities’, in Walter Rugg and Hilde De Ridder-Symoens (eds.), *A History of the University in Europe*, 2 vols., II: Hilde de Ridder-Symoens, *Universities in Early Modern Europe* (1997) 531-62, here 536, 538.

⁹ Harold J. Cook, ‘The new philosophy and medicine in seventeenth-century England’, in David C. Lindberg and Robert S. Westman (eds.), *Reappraisals of the Scientific Revolution* (1990) 397-436, here 397, 424.

history, empirical experience and, in the case of medicine, active curative intervention, rather than preventive, individualized humour-balancing ‘physic’ and therapeutic dietetic regimen, and the subsequent ‘newly experimental medicine’ in anatomy, physiology, chemistry and pathology were both stimulated by, and closely linked to, new scientific ideas.¹¹ In England, physicians supporting the ‘new philosophy’ strove to maintain the intellectual foundations of their university-based learning by combining the ‘Rules, Methods, and Medicines’ of traditional learned physic with ‘New Improvements and Discoveries in Physick’, and ‘Experimental Philosophy’.¹²

The concept of a so-called medical revolution as ‘an integrated package of intellectual and practical changes, each interacting closely on the other’,¹³ has received close scrutiny, among others, from Andrew Wear who maintains that in England during this period the ‘new philosophy did not, and could not, alter traditional rational ways of thinking about illness and the effects of medicines – although the terms in which the explanations were couched, of course, did change radically’.¹⁴ Wear argues that an underlying unity between the various medical sects such as ‘Galenists, Paracelsians, empiricists, chemists, iatrochemists, iatromathematicians’, implied ‘a lack of change both in medical theory and practice’.¹⁵ He sees this unity as ‘the consequence of the need by medical practitioners to be understood by patients, to relate to their expectations and hence

¹⁰ Cook, ‘The new philosophy and medicine’, 401.

¹¹ *Ibid.*, 403-5, 414-24.

¹² Harold J. Cook, ‘Physicians and the New Philosophy: Henry Stubbe and the Virtuosi-Physicians’, in Roger French and Andrew Wear (eds.) *The Medical Revolution of the Seventeenth Century* (1989) 246-71.

¹³ Jonathan Israel, ‘Counter-Reformation, economic decline, and the delayed impact of the medical and health-care revolution of the seventeenth century in Catholic Europe (1550-1750)’, in Ole Peter Grell, Andrew Cunningham and Jon Arrizabalaga (eds.), *Health Care and Poor Relief in Counter-Reformation Europe* (1999) 40-55, here 44.

¹⁴ Andrew Wear, ‘Medical practice in late seventeenth- and early eighteenth-century England: continuity and union’, in Roger French and Andrew Wear (eds.), *The medical revolution of the seventeenth century* (1989), 294-320, here 319; See also Andrew Wear, ‘Medicine in Early Modern Europe, 1500-1700’, in Laurence I. Conrad, Michael Neve, Vivian Nutton, Roy Porter, Andrew Wear, *The Western Medical Tradition 800 BC to AD 1800* (1996 [1995]) 215-361, here 228-50.

¹⁵ Wear, ‘Medical practice’, 319.

to attract their trade'.¹⁶ Wear concedes that 'the chemical, corpuscular, experimental and mathematical developments in science came to be united in different ways to provide new theoretical bases for medicine' and that the 'non-mathematical, non-mechanical, qualitative-humoral system of the ancients seems to have been replaced', but he found that the change which occurred was 'theoretical and ideological' and the 'successes of the mechanical philosophy were rarely practical'.¹⁷ Wear points to the lack of any significant fall in mortality rates and to the absence of new technical apparatus (apart possibly from the microscope) giving hope for better cures, concluding that 'in certain respects there was no such thing as a new medicine',¹⁸ and that the new philosophy, despite its empiricism and appearance of objectivity, was 'as speculative as the Aristotelian-Galenic when it came to describing the hidden happenings of nature'.¹⁹ In his view, 'new scientific theories formed part of the rhetoric used to differentiate medical groups and served the same function as humoral medicine, to make sense of illness, but in a deep sense they altered little'.²⁰ Even among the financially independent sick, Wear reports, the medical expert, as gleaned from diaries, letters, autobiographies and other documents, was 'largely absent and only consulted in cases of very severe illness'.²¹ Roy Porter also maintains that 'the sixteenth and seventeenth centuries brought no revolution in medical services or treatments'.²²

Johanna Geyer-Kordesch states that during the early eighteenth century 'the new science was obviously a leading theme in intellectual discourse; but it was not, outside of some universities and the correspondence of the scientifically aware, proscriptive for medical practice'.²³ In the case of Protestant Germany, spread of the

¹⁶ Wear, 'Medical practice', 294.

¹⁷ Ibid., 294-5.

¹⁸ Ibid., 300.

¹⁹ Ibid., 295.

²⁰ Ibid., 320.

²¹ Andrew Wear, 'Caring for the sick poor in St. Bartholomew's Exchange: 1580-1676', in W. F. Bynum and Roy Porter (eds.), *Living and Dying in London, Medical History Suppl. No. 11* (1991) 41-60, here 54.

²² Roy Porter, *The Greatest Benefit To Mankind, A Medical History of Humanity from Antiquity to the Present* (1999) 231.

²³ Johanna Geyer-Kordesch, 'Court physicians and State Regulation in Eighteenth-century Prussia: The emergence of medical science and the demystification of the body', in Vivian Nutton (ed.), *Medicine at the Courts of Europe 1500-1837* (1990) 155-81, here 157.

new awareness of science and of a new medical culture was closely linked to the wider western European debate in England, Italy, France, and the Netherlands, as is evident from the many references to scientific developments and medical authorities in the erudite journals and other contemporary publications. Academic training in, and close contacts with, the northern Netherlands, with large number of German medical students studying at Dutch universities, and the huge impact of Dutch publishing on the German book market, the proliferation of periodicals, book reviews, and book production in Germany, aimed at the general public in the vernacular, must therefore raise the question how the intellectual and scientific influences emanating from the Dutch context since the mid-seventeenth century could possibly not have had a broad impact on medical theory *and* practice, and on German culture more generally.

Indeed, closer study of the works of self-proclaimed Dutch Cartesian medical reformers of the period and their followers – Cornelis Bontekoe (1647-1685), Steven Blankaart (1650-1704), Heydentryk Overkamp (1651-1694), Joannes Muys (1659-1699), Janusz Abraham Gehema (1647-1715) and others - and the responses they provoked in the German medical and vernacular literature of the time, strongly suggests that their ‘new’ approach, urging a more science-oriented medicine based on Sylvian iatrochemical and Cartesian mechanistic principles, and more active involvement of patients in maintaining health by reading medical books in the vernacular, and adopting a health-conducive lifestyle, was, and for several decades remained, a central issue in medical and public debate.

While the tendency, since the 1980s, to stress the ‘home-made’ and national character of the Early German Enlightenment has not excluded acknowledgement of external factors,²⁴ the issue of Dutch influence on the German Early Enlightenment has generally not been thought an important aspect. The explicit Cartesian framework within which the post-1650s medical reform initiatives in the Netherlands evolved was probably both weaker and regionally more fragmented in the German context and, except for a few universities such as Heidelberg, Duisburg

²⁴ See Werner Schneiders, ‘300 Jahre Aufklärung in Deutschland’, in Werner Schneiders (ed.), *Christian Thomasius (1655-1728), Interpretationen zu Werk und Wirkung* (1989) 1-20, here 14-16.

and Marburg, and individuals such as Tschirnhaus, one of the most prominent mathematicians and experimental scientists in late seventeenth century Germany who publicly claimed to be a Cartesian, the reception and impact of Cartesianism in Protestant Germany (so far not systematically examined) appears to have been more sporadic than in the Netherlands or late seventeenth century Sweden,²⁵ and in Catholic Germany and Austria very restricted.

In Protestant Germany, one of the most decisive intellectual impulses reshaping German intellectual culture in this period - the legacy of Christian Thomasius and his followers - was expressly eclectic in philosophy and consequently adopted a somewhat pick and choose attitude towards Cartesianism. At the same time, the spread of the new 'philosophia practica' favoured by the Thomasians was reinforced by the influence of Pietism with its social reforming tendency and stress on improvements in life-style, family life and charitable institutions, as well as improved health. Pietism's relatively flexible approach to doctrinal matters, by diluting traditional Lutheran antipathy to books and ideas emanating from the Calvinist Netherlands, likewise did not preclude penetration of Dutch intellectual influence. For political reasons connected with the confessionally hybrid character of the Prussian state, the Brandenburg-Prussian court was keen to sponsor this undogmatic approach and to soften Calvinist-Lutheran antagonism.²⁶

In the same way Thomasius and his followers envisaged that their 'philosophia practica' could comprehensively reform and improve the legal, educational, and general cultural context of life in Germany, medical reformers of the Early Enlightenment period believed a correct philosophical approach combined with the new iatrochemical and iatrophysical principles could lead to major practical improvements in the sphere of medicine and health care. Inspired by the ideas of Descartes and his major Dutch and German commentators such as Johannes de Ray, Johannes Clauberg, Christopher Wittichius, Arnold Geulincx, and Burchardus de Volder (one of Leibniz's most important philosophical correspondents), as well as the medical doctrines of Franciscus de Bœ Sylvius and Theodor Craanen, they

²⁵ Israel, *Radical Enlightenment*, 35-8.

constructed a medical reform programme which they propagated in the vernacular with great energy and determination. Their popularizing works in Dutch and German advocated a root and branch reform of medicine with an almost total rejection of traditional Galenic and Aristotelian medical theory and practice. Inevitably, they met with extensive opposition, particularly from adherents of the ‘anti-mechanist’, ‘animist’ medical theories of Georg Ernst Stahl. But they also received the support of a significant group of Cartesian doctors in the Netherlands and in Germany who, to a greater or lesser extent, actively promoted their aims and efforts to unify the principles of medicine into a single system, bringing surgery, pharmacology and the skills of the physician into close interaction, with a number of them actively involved in translating their works into German. According to Theodorus Schoon (1656-d.?), one of the Dutch Cartesian medical reformers, exponents of the ‘new’ medicine (most of whom were Dutch or German) were ‘Broekhuysen, Bontekoe, Charleton,²⁷ Hooglandt,²⁸ Zypeus,²⁹ Waldschmidt, Dol[a]eus, Blankaart, Muys, Overkamp, Sylvius, Broen, Daalmans, Gehema, van Duuren,³⁰ van der Sterre,³¹ and infinitely more’.³²

The statistical pattern of publication of these Dutch medical reforming works in German translation, with fairly frequent new editions and reprints down to around 1720, suggests these texts were not only being read but still contributed to current debate about medical theory and practice even after three or four decades. A variety of supporting evidence confirms that this was indeed the case and that their books retained their relevance not only in the period before the rise of Herman Boerhaave’s

²⁶ Mary Fulbrook, *Piety and Politics, Religion and the Rise of Absolutism in England, Württemberg and Prussia* (1983) 153-4; Mary Fulbrook, *A Concise History of Germany* (1990) 80, 88.

²⁷ Walter Charleton (1619-1707), president of the Royal College of Physicians in London, was a self-proclaimed ‘Eclectic’, combining philosophical mechanist elements of Descartes and Pierre Gassendi (1592-1655), and a ‘highly influential pioneer of Gassendian atomism’ in England. See Albrecht, *Eklektik*, 276-7; *HBL* 2nd I, 888.

²⁸ On Cornelis van Hogelande (b. 1590), a close friend and correspondent of Descartes, see C. Louise Thijssen-Schoute, *Nederlands Cartesianisme* (1989 [1954]) 36, 37, 229, 232-4, 249; *NNBW* II, 595-6.

²⁹ Franz van Zypen (Zypaeus) (n. d.) was professor of anatomy and surgery in Brussels, and later Leuven. His *Fundamenta medicinae physico-anatomica* (Brussels, 1683; 1731; Lyon, 1692) was long regarded as a classic. See *HBL* 2nd V, 1058.

³⁰ For Van Duuren no biographical information has so far been located.

³¹ See below, ch. II, 83-4.

³² Theodorus Schoon, *Ware oeffening en ontleding der planten* [...] (The Hague, 1692) Preface, 5; For Broekhuysen and Broen see below, ch. I, 32 notes 78 and 79.

reputation, and those of Friedrich Hoffmann and Stahl, but also for some considerable time after their influence began to be felt. In the past, perhaps too much emphasis has been placed on the personal role of Boerhaave. As one historian put it, ‘Holland led the way in medical science in the seventeenth and early eighteenth centuries, when Boerhaave (1668-1738), building on foundations well laid by his predecessors, attracted students from all over Europe by his clinical skill.’³³ Boerhaave’s personal qualities, it has been argued, would not have sufficed to account for his phenomenal success. ‘Historical reason[ing] and a vast amount of factual proof’, Richard Toellner suggests, are ‘indicative of the fact that the field for his influence in Germany had been prepared’.³⁴ No doubt, Boerhaave, in the clinical field, was vastly in advance of his predecessors, but as regards the theoretical side, his mechanistic hydraulic system was less remote (and less independent) from the vision of Bontekoe and Blankaart than historians such as Lindeboom have tended to suggest.³⁵

³³ W. H. Bruford, *Germany in the Eighteenth Century, The Social Background of the Literary Revival* (1965) 257.

³⁴ Richard Toellner, ‘Die Bedeutung der niederländischen Universitäten für die Medizin in Deutschland im 17. Jahrhundert’, in M. J. van Lieburg and R. Toellner (eds.) *Deutsch-Niederländische Beziehungen in der Medizin des 17. Jahrhunderts* (1981) 13-23, here 18; See also J. Dankmeijer, ‘Is Boerhaave’s faam gerechtvaardigt?’, in F.L.R. Sassen and J. Dankmeijer, *Herman Boerhaave 1668/1968* (1968) 23-39.

³⁵ G. A. Lindeboom, *Geschiedenis van de Medische Wetenschap in Nederland*, 2nd edn. (1981) 96; Johanna Geyer-Kordesch, in *Pietismus, Medizin und Aufklärung in Preußen im 18. Jahrhundert, Das Leben und Werk Georg Ernst Stahls* (2000) 36, 222-7, in fact, clearly indicates that Boerhaave, and like him, Friedrich Hoffmann and Albrecht von Haller in Germany, sought to construct a *medicina mechanica* according to post-Cartesian mechanistic principles.

Chapter One

The Cultural and Institutional Context

i) German Medical Students at Dutch Universities

Over the last two centuries, historians have occasionally remarked that cultural relations between the Netherlands and Germany, and Dutch influence on German culture in early modern times, particularly during the seventeenth and early eighteenth century, were more intense and more complex than has generally been recognized. In recent years there has been somewhat more effort to study the history of Dutch-German cultural relations, looking at its varied aspects in a more integrated fashion. For this purpose, a foundation for the promotion of German studies in the Netherlands was instituted in Amsterdam in 1986. In Germany, an academic *Zentrum für Niederlande-Studien* was founded in Münster in 1989, for historical reasons appropriately placed, in that it was at Münster that the Peace of Westphalia (1648) was ratified, ending the Thirty Years War and the eighty years conflict between the Dutch Republic and Spain. The *Zentrum* in Münster has been unique in being the first German institution to aim to research systematically all the historical, political, economic and cultural aspects of Dutch-German relations, seeking to present a comprehensive profile at university level as well as to the public in general, an obligation that is particularly felt given the ill-treatment of the Dutch neighbour during the Second World War, which have caused the Dutch-German relationship to remain ‘highly sensitive’ to this day.¹

For most of the seventeenth century, the prosperous and dynamic Dutch Republic of the United Provinces stood in striking contrast to a Germany largely devastated by the Thirty Years War (1618-48). Artistic, musical, theatrical and literary life had contracted to a very low level, as had scholarship, medical science and the volume of publishing. The universities had virtually ceased functioning. Even several of the most famous German universities such as Heidelberg, Frankfurt on Oder and Königsberg, continued in decay for

¹ *Zentrum für Niederlande-Studien, Dokumentation zur Entstehungsgeschichte und zu den Aufgaben* (1993).

much of the second half of the seventeenth century, while there were few major new initiatives in the academic sphere before the founding of the highly successful new university of Halle in 1694.²

In the neighbouring northern Netherlands, a prodigious increase in prosperity enhanced the newly independent republic's prominent role in European cultural and academic, as well as political and economic life. The innovative and outstandingly successful organization of the Dutch army, navy, colonial companies and fiscal system in particular proved a constant point of reference for German Protestant princes eager to revive and reorganize their states.³ At the same time, Dutch learning, science, and artistic life flourished. Consequently, it is not surprising that after 1648, in cultural matters, as in administration, parts of Germany, especially the Calvinist states, mixed Calvinist-Lutheran states such as Brandenburg-Prussia, and the German-speaking Baltic areas, looked towards the Dutch Republic as a model to a probably greater extent than to any other European state.⁴

In the medical sphere a number of factors contributed to the strong Dutch influence. Especially important were the large number of German medical students studying in the Netherlands, the preponderant impact of the Dutch universities in the promotion of the 'new' philosophy and science during the second half of the seventeenth century and early eighteenth, the presence of physicians trained in the Dutch universities at the medical faculties of German Protestant universities, and as court, city, and army physicians, and finally the influx of Dutch medical works, aimed at the general public in the vernacular, both in Dutch and German.

The Thirty Years War, during which German cultural life was at its lowest point, had

² By contrast, from the closing years of the seventeenth century, through much of the eighteenth, many of the most significant efforts to re-activate and reform universities in Europe took place in Germany.

³ H. W. Koch, 'Brandenburg-Prussia', in John Miller (ed.), *Absolutism in Seventeenth Century Europe* (1990) 123-55, here 137, 139-41, 149, 151.

⁴ In Brandenburg-Prussia the many trading and cultural connections of its Lower Rhine territories and Baltic coastal areas with the Netherlands, and the close family relations between the House of Hohenzollern and the House of Orange encouraged a lively interaction, geared to reviving its seriously dislocated society and economy through trade and industry, agriculture, construction and engineering. See, for example, E. Opgenoorth, *Friedrich Wilhelm, der Große Kurfürst*, I (1971); II (1978); For a recent discussion of 17th and 18th century Dutch cultural influence in German territories, see Horst Lademacher (ed.), *Onder Den Oranje Boom, Niederländische Kunst und Kultur im 17. und 18. Jahrhundert an deutschen Fürstenhöfen* (catalogue); *Dynastie in der Republik, Das Haus Oranien-Nassau als Vermittler niederländischer Kultur in deutschen Territorien im 17. und 18. Jahrhundert* (text), (1999).

of course been one of the main reasons for German students to prefer the stimulating intellectual climate of the Dutch universities. This is reflected in the fact that the proportion of Germans of the student total at the Dutch universities was at its highest during this period. Considering the many trading and cultural connections of the Rhineland, Westphalia, and the coastal areas of northwest Germany with the Netherlands, it is natural that students from these parts figured prominently. Particularly the very close connections of the Calvinist church in the Lower Rhine areas (Cleves-Mark) to the Reformed church in the Dutch Republic, as well as such Calvinist localities as Bremen, Emden, Bentheim, Tecklenburg, Steinfurt, Anhalt, Nassau and Lippe, and more mixed regions such as Hessen, and the Palatinate, made students especially inclined to study at the Dutch universities rather than at other Protestant universities further east, or even Calvinist universities such as Heidelberg and Herborn. Of Lutheran areas, Hamburg, Lübeck, and west of the Elbe, Hanover, were also strongly represented.⁵ The number of students from north-east and east-central Germany and the German-speaking cities of the east Baltic also studying in the northern Netherlands, is, however, particularly remarkable. No less than 700 students from East and West Prussia studied at Leiden University during the first century of its existence down to 1675, including a large part of the Danzig patriciate.⁶

Students not only from Germany but from various European countries, albeit chiefly from Protestant areas, studied at the universities of Leiden (founded in 1575), Franeker (1585), Groningen (1614), Utrecht (1636) and Harderwijk (1648) in all the faculties, especially theology, law, and medicine. Leiden, Franeker, and (later) Utrecht soon became international Protestant universities.⁷ By the 1640s, Leiden was the largest university in northern Europe. During the quarter-century 1626-50, Leipzig, Germany's biggest university, had a student total of 6,727, Cambridge 8,380, and Leiden 11,076 with more than half of the student population (5713) coming from outside the Dutch Republic.⁸

⁵ Heinz Schneppen, *Niederländische Universitäten und Deutsches Geistesleben, Von der Gründung der Universität Leiden bis ins späte 18. Jahrhundert* (1960) 39; Günter von Roden, *Die Universität Duisburg* (1968) 62; Franck Smit, 'Buitenlandse studenten te Groningen 1614-1815', in A. H. Huussen Jr. (ed.), *Onderwijs en Onderzoek, Studie en Wetenschap aan de Academie van Groningen in de 17e en 18e Eeuw* (2003) 261-82, here 269-76; Georg Becker, *Die deutschen Studenten und Professoren an der Akademie zu Franeker* (1943) 6-8; H. T. Colenbrander, 'De Herkomst der Leidsche Studenten', in *Pallas Leidensis* (1925) 275-303.

⁶ Schneppen, *Niederländische Universitäten*, 27; See also Becker, 'Deutsche Studenten', 8.

⁷ Jonathan Israel, *The Dutch Republic, Its Rise, Greatness and Fall 1477-1806* (1995) 571-2.

⁸ H. Wansink, *Politieke wetenschappen aan de Leidse Universiteit 1575-1650* (1981) 9, 37 note 30.

Throughout the seventeenth and eighteenth century, Germans were the largest group among the foreign students in Leiden, as also at the universities of Franeker, Groningen, Utrecht, and Harderwijk. Altogether, around 19,000 students (18697 recorded), that is 1/5th of all students matriculating in the northern Netherlands) came from Germany.⁹ At Leiden, between 1640 and 1740, 986 Germans studied medicine compared with 325 English and Scots. In the period 1651-1675, German students at Leiden (1952) accounted for nearly 20% of all matriculations, of whom 11% (222) obtained medical degrees.¹⁰ At Franeker, where over the whole span of the university's history (1585-1811) 70% of all foreign students who graduated were German, around 15% are known to have gained a medical doctorate.¹¹ At Groningen, between 1614 and 1815, of the foreign student total of 4533, German students, here mainly from the border regions, accounted for 80% (3601) of all matriculations. Of these, (3,2%) (114) studied medicine out of a total of 139 foreign medical students.¹² Although the number of German medical students was relatively small compared to Leiden and Utrecht, the same pattern emerges in that the university's prestige, and its ability to attract German students, was much greater between 1650 and the 1730s, than either before or after. Between 1665 and 1735, of the German students at Groningen, seventy-three obtained medical doctorates, whereas in the subsequent seventy years (1735-1805) the comparable figure was twenty-three.¹³

If the largest number of German students studying at Dutch universities originated in the north-western regions of Germany, an area at this time (i.e. before the founding of Göttingen University, in 1733-7) with relatively few Protestant universities, unsurprisingly, given the circumstances of the Thirty Years War, and the ascendancy of the Catholic confession in Bavaria, Austria, Bohemia, Franconia, and other parts of the south, much smaller numbers of students came from south of the Main. Even so, as is evident from the tables in Schneppen's important study of Dutch universities and their impact on German intellectual life during the seventeenth and eighteenth centuries, there was a steady stream

⁹ Schneppen, *Niederländische Universitäten*, 132.

¹⁰ *Ibid.*, 16.

¹¹ J. A. H. Bots and W. Th. M. Frijhoff, 'De studentenpopulatie van de Franeker academie', in G. Th. Jensma et al (eds.), *Universiteit Franeker 1585-1811* (1985) 56-72, here 59; Hilde de Ridder-Symoens, 'Buitenlandse studenten aan de Franeker universiteit 1585-1811', in Jensma et al, *Universiteit Franeker*, 73-89, here 78.

Unlike Schneppen, De Ridder-Symoens excludes German-speaking students from the eastern Baltic, see p. 73.

¹² Smit, 'Buitenlandse studenten' 1614-1815', 265-7.

¹³ *Ibid.*, 267-8.

also from this large region, notably from predominantly Protestant cities, in particular Nuremberg.¹⁴

Table 1. German students at Dutch universities

Region	Leiden 1575- 1750	%	Franeke 1585- 1811	%	Groningen 1615- 1775	%	Utrecht 1636- 1750	%	Harder- wijk 1648- 1800	%
Student total	52424		c.14000		c. 11000		c. 6550		c. 6850	
Germans	10804	20,6	2379	16,9	2988	27,2	986	15,1	1327 ¹⁵	19,4
Hesse, Palatinate, Mainz	883	8,2	294	12,4	371	12,4	114	11,5	43	3,2
Rhineland	1182	10,9	272	11,4	354	11,8	232	23,5	164	12,4
Westphalia	892	8,3	226	9,5	684	22,9	108	11	892	66,4
North-west Germany ¹⁶	1283	11,9	530	22,3	1031	34,5	170	17,2	113	8,5
Hamburg & Schleswig- Holstein	940	8,7	132	5,5	90	3	87	8,8	22	1,7
Mecklen- burg & Pommern	694	6,5	197	8,3	70	2,3	41	4,2	12	0,9
Altpreußen Livland & Kurland	1371	12,7	363	15,3	144	4,8	56	5,7	22	1,7
Branden- burg ¹⁷	589	5,5	201	8,4	49	1,6	37	3,8	26	2
Thuringia & Saxony	713	6,6	45	1,9	52	1,7	46	4,7	14	1
Silesia	693	6,4	43	1,8	58	1,9	27	2,7	5	0,4
South- & south-west Germany	725	6,7	30	1,3	44	1,5	24	2,4	12	0,9
Austria & Bohemia	655	6,1	7	0,3	6	0,2	3	0,3	2	0,2
'Germani'	184	1,7	39	1,6	35	1,8	41	4,2	-	-

Sources: Schneppen, *Niederländische Universitäten*, 13-15, 134-9; Wansink, *Politieke wetenschappen*, 8. Wansink lists total student numbers for Leiden (1575-1795) 57289, Franeke (1585-95) 14208, Groningen (1615-1795) 11255, Utrecht (1636-1795) 8274, and Harderwijk (1648-1795) 6845.

¹⁴ Schneppen, *Niederländische Universitäten*, 12-15, 134-9.

¹⁵ Adding Schneppen's sub-columns yields an actual figure totalling 17 less than he states for Harderwijk.

¹⁶ That is the Electorate of Hanover (including Brunswick and Wolfenbüttel) plus Bremen, Oldenburg, and East Friesland.

¹⁷ Including Magdeburg, Anhalt, and Halberstadt.

With reference to the Baltic, Schneppen concludes that the ‘significant number of graduates from Dutch universities in all the important positions of public life – as professors in Danzig, Königsberg, Elbing and Thorn, as mayors, councilors, secretaries, and town architects in Königsberg and Danzig, as theologians, lawyers, and medical doctors, are an indication of the extent and intensity of Dutch cultural influences on Prussia [East and West] in the seventeenth century’.¹⁸ In Königsberg, for example, to have studied at a Dutch university was the best recommendation for an academic post. For decades after 1648, when German universities began to recover, the most able students of Königsberg professors appear to have gone to Leiden in order to complete their studies and ‘habilitate’.¹⁹

These cultural tendencies in East- and West Prussia were part of a wider pattern extending across the German-speaking districts east of the Oder, including Silesia. Although East-Prussia and the Baltic countries were not disrupted by the fighting, nevertheless, culturally they were also considerably affected by the Thirty Years War which forced them to look elsewhere rather than to Germany for their higher education opportunities. Indeed, throughout the period from 1596 to 1760, Leiden University, after the universities of Königsberg and Rostock, but ahead of Frankfurt on Oder, Strassburg and Kiel, was the third most frequented university by Baltic German-speaking students.²⁰ Probably there were additional reasons, besides the high reputation of the Dutch universities, that contributed to German students gravitating to the Netherlands. Few of the medical professors, or university trained physicians, after 1650, for instance, received their training, or obtained doctorates, in France or England, and it seems likely that incidental factors such as the high cost of living in England, and ecclesiastical supervision of the universities in France, and the greater language gap, played some part in this. Also, scholarly and scientific books in Latin published in England were more expensive than in the Dutch Republic.²¹

¹⁸ Schneppen, *Niederländische Universitäten*, 29.

¹⁹ *Ibid.*, 28.

²⁰ *Ibid.*, 29.

²¹ Paul G. Hoftijzer, ‘The English book in the seventeenth-century Dutch Republic’, in Lotte Hellinga, Alastair Duke, Jacob Harskamp, Theo Hermans (eds.), *The Bookshop of the World, The role of the Low Countries in the Book-Trade 1473-1941* (2001) 89-107, esp. 91-2, 100.

ii) The Impact of Dutch Academic ‘New’ Philosophy and Science on German Medical Thought

Dutch world primacy in shipping, trade, finance and commerce, as well as in technological development, and science, from the 1590s onwards had a considerable impact on many European countries. In the sphere of medical innovation, in respect of both theory and practice, this impact was clearly visible in Protestant Germany as early as the 1650s and remained strong down to around 1730. By contrast, in the German Catholic states, it became marked only much later, in the second quarter of the eighteenth century, culminating in the reform of medical teaching in Vienna by Gerard van Swieten in the 1740s.²²

From the 1590s, the increasing political stability and prosperity of the Dutch Republic, making more money available for new professors, books, and facilities, contributed considerably to the growing reputation of Dutch university education at Leiden, Franeker, Groningen, Utrecht and Harderwijk.²³ But in contrast to other areas of study, Dutch universities did not have a broad European influence in the medical sphere until after the middle of the seventeenth century. Previously, Basel and Padua had been the most prestigious foreign centres of medical instruction. The growing international fame of Dutch medical teaching, from the 1640s onward, soon attracted increasing numbers of medical students from all over Europe and beyond, and especially from Protestant German-speaking lands, leading to the rapid receding of Basel and Padua as formative influences on medical culture.

This remarkable change resulted from several factors. In the medical faculties, anatomy and physiology, chemistry and physics were taught by outstanding scholars like Johannes de Wale (Walaëus; 1604-49), Franciscus Dele Boë Sylvius (1614-72), Florentius Schuyt (1619-69), Theodor Craanen (1620-88)²⁴ and Burchardus de Volder (1643-1709), all at Leiden, Nicholas Tulp (1593-1674) and Frederik Ruysch (1638-1731) at Amsterdam, and Henricus Regius (1598-1679) at Utrecht. They drew large numbers of students to their lectures and generated a new philosophical-chemical-mechanistic approach to medicine, culminating

²² Erna Lesky and Adam Wandruszka (eds.), *Gerard van Swieten und seine Zeit* (1973); Frank T. Brechka, *Gerard van Swieten and his world 1700-1772* (1970).

²³ Israel, *Dutch Republic*, 571-2.

in the work of Boerhaave which, over the next century, transformed medical thinking and practice in Europe. A new emphasis on scientific experiment, clinical instruction, and installing costly teaching facilities such as anatomy theatres, chemical laboratories, and botanical gardens for pharmaceutical purposes generated a whole new culture of medical scholarship and teaching. The new approach led to a campaign against the medical thinking and typical remedies of the past, in favour of using new medicines, instruments and techniques, including the introduction of bedside clinical teaching and the compiling of case studies.²⁵

The introduction of Cartesian philosophy in the Dutch universities in the 1640s and 1650s rapidly exerted a major impact in the fields of medicine, science and theology, as well as philosophy. William Harvey's controversial new theory of the circulation of the blood, solely based on scientific experiments and observations following the strictly empirical method advocated by Francis Bacon (1561-1626), published as *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (1628), with Descartes among its first supporters,²⁶ was one of the new concepts that contributed to revolutionizing medical thought and, at the same time, increasingly divided scholars and students into two warring camps – Aristotelians and Galenists on the one hand and their fiercely critical Cartesian opponents on the other. Descartes' philosophical model, an integrated system of thought in which everything in the physical sphere operates according to general laws, explicable in mechanistic terms, meant discarding the whole of Aristotelian-Galenic thought. In the medical sphere this led to Descartes' Dutch followers developing a physiology that was closely linked to his general philosophy and physics. This involved replacing Aristotelian and Galenic 'qualities of different tissues and the nature or "faculty" of the individual organ' with explaining the workings of the body in corpuscular terms of the 'shape, arrangement, and movement of insensibly small particles interacting like the parts of a supremely intricate machine'.²⁷

Descartes's posthumously published *Traité de l'homme* (1664) is a complex

²⁴ Most authorities give Craanen's death date as 1689. Recent research indicates that he actually died on 27 March 1688. See Gernot Born and Frank Kopatschek, *Die alte Universität Duisburg 1655-1818* (1992) 71.

²⁵ Schneppen, *Niederländische Universitäten*, 105-11.

²⁶ Another early supporter was the well-known Dordrecht physician and erudite classical scholar Johan van Beverwijck (1594-1647). See Vivian Nutton, 'Dr James's legacy: Dutch printing and the history of medicine', in Hellinga et al, *Bookshop of the World*, 207-17, here 211, 213-14.

reconstruction of the human body and its autonomic functions (e.g. respiration, digestion, circulation of the blood, sensory perception etc.) based on the disposition and structure of the organs and the movements of their dependent parts, similar to the actions of a clock or engine, and excluding any body-soul-unity or clear, direct interconnection. Prime mover of this body machine is the blood, driven by heat produced in the heart, into the arteries and the brain, where very fine particles, the *spiritus animales*, are filtered out, initiating nerve and muscle activity.²⁸ With body and soul sharply divided, the soul's function within the body machine (also compared to a fountain with pipes and engine) is seen only in terms of a 'fountain-master' or rational system controller, located in the brain's pineal gland, where, in 'mysterious metamorphosis', its imagination can 'inform' the body, intervene, and manipulate movement at will.²⁹ In this way, Descartes also insists in *Passions of the Soul* (1649), the soul is 'joined to all parts of the body' while, at the same time, vaguely conceding that a lot of human bodily movements and actions in fact 'bypass the soul' as 'products of self-contained mechanical cycles within the body', analogous to the 'mechanical' behaviour in animals, which Descartes took to have no souls, thought, or experience.³⁰

Descartes' notion of the mechanism of life in 'warm-blooded creatures' is said to have been 'primitive by the most advanced standards of his own time' (e.g. he saw a connection between the heart beat and generating heat, although Harvey had already refuted this).³¹ Equally, orthodox Cartesianism, shaped as it was by an overemphasis on purely theoretical reasoning and thus speculation, has often been claimed not to have been conducive to experiment and empirical research,³² but it did provide medical science with a mechanistic concept of the human body, and a theoretical framework for empirical research in the modern sense, that would yield, in time, reliable, practically useful medical knowledge. Since Cartesian thought allowed no direct connection between body and soul, anatomical research on dead humans could be pursued without compunction. Since it denied to 'beasts' the psycho-physical union of mind (soul) and body, and thus conscious awareness

²⁷ Edward G. Ruestow, *The Microscope in the Dutch Republic, The Shaping of Discovery* (1996) 41.

²⁸ Alex Sutter, *Göttliche Maschinen, Die Automaten für Lebendiges bei Descartes, Leibniz, La Mettrie und Kant* (1988) 53-4.

²⁹ Ibid., 56-7, 63.

³⁰ Bernard Arthur Owen Williams, *Descartes: The Project of Pure Enquiry* (1986 [1978]) 278-92, esp. 282-4.

³¹ Ibid., 278.

and physical sensations such as pain, it encouraged experimental research in physiology on living animals.³³ The development of early modern physiology, biology and medicine must thus be viewed in conjunction with Cartesian mechanism. Descartes' own views on medicine, for all his rejection of Aristotelianism and Galenism, have been described as an 'eclectic, reductive restatement of classical ideas, adapted to fit his own cosmological and physical doctrine', an 'interpretation partly of empirical fact but primarily of earlier Renaissance revisions of Greek physiological doctrine'. Others suggest that Descartes' method entailed a 'logic of discovery'.³⁴ Yet, despite his anatomical and physiological experiments, palpable success failed to materialize.³⁵

Orthodox Cartesianism, however, was not the only shaping factor. Harvey's hypothesis had provoked discussion in the Netherlands since the early 1630s,³⁶ challenging, as it did, the traditional theory-laden Galenic conception of the cardio-vascular system which envisaged the origin of the arteries in the heart and of the veins in the liver, the active phase of the heart in diastole, and the transfer of blood from the right to the left ventricle through pores in the heart's intraventricular septum. The conception of a two-way flow of blood excluded its regular pulmonary transit or any circular motion.³⁷ The new concept of physiology was not to Harvey's own mind 'revolutionary and far-reaching' - as a Renaissance anatomist, he still thought and worked in the orthodox context of ancient medicine and explicitly rejected the new science - and initially was not free of old (and new) misconceptions.³⁸ Acceptance of Harvey's hypothesis was slow, but from the 1640s onward, especially in conjunction with Cartesianism, it became one of the most widely discussed topics in the medical faculties of the Dutch universities, and one which provoked extensive

³² Ruestow, *Microscope*, 62-3.

³³ John Cottingham, *Descartes Dictionary* (1993) see entry 'animals', 15-17.

³⁴ Francesco Trevisani, 'Medizin und Cartesianismus in Deutschland am Ende des 17. und zu Beginn des 18. Jahrhunderts', in Wolfgang Eckart and Johanna Geyer-Kordesch (eds.), *Heilberufe und Kranke im 17. und 18. Jahrhundert* [...] (1982) 201-24, here 201.

³⁵ *Ibid.*, 202.

³⁶ Between 1628 and 1671 seven editions of *De motu cordis* appeared in Holland, two in England, and two in Italy. See Nutton, 'Dr James's legacy', 213.

³⁷ Andrew Wear, 'The Heart and Blood from Vesalius to Harvey', in R. C. Olby, G. N. Cantor, J. R. R. Christie and M. J. Hodge (eds.), *Companion to the History of Modern Science* (1989) 568-82, here 569-70.

³⁸ *Ibid.*, 577-9; Andrew Wear, 'Medicine in Early Modern Europe, 1500-1700', in Conrad et al, *Western Medical Tradition*, 325-40.

experimental research and numerous pro-circulation dissertations by medical students.³⁹ Whereas conservative Leiden scholars like Otto van Heurne (1577-1652) and Adriaan van Valckenburg (1581-1650) reportedly went so far as to perforate the *septum ventricolorum* before an anatomical demonstration in order to uphold the Galenic conception of the blood circulation,⁴⁰ others like Johannes de Wale, professor of anatomy at Leiden and, until 1638, a sharp critic of Harvey's theory, were won over by the convincing explanations and demonstrations on the blood circulation by Franciscus Dele Boë Sylvius who, during a study period in Leiden (1638-41), gave private anatomy lectures to large groups of students and other spectators.⁴¹ Walaeus, one of the few who independently delved deeper into Harvey's theory and put further experimental evidence forward,⁴² also encouraged medical students publicly to dispute it.⁴³ In Utrecht, Cartesian physics, linked with William Harvey's new theory of the blood circulation, were championed by the professor of medicine, Henricus Regius, whose disputations, however, remain 'Aristotelian in the sense that Aristotelian concepts are reinterpreted rather than discarded'.⁴⁴

Medical historians have suggested that the debates and controversies emanating, first and foremost, from the universities of Leiden and Utrecht, especially with regard to Harvey's circulation theory and Cartesian thought, must have had an earlier and broader reception in Germany than has been realized until recently.⁴⁵ So far, research in this field is still very fragmented, but a study at Leiden University investigating medical dissertations, written between 1610-88, established that German students contributed considerably to the introduction and development of Harvey's theory.⁴⁶

A systematic analysis of all medical dissertations published in Leiden between

³⁹ M. J. van Lieburg, 'Deutsche Studenten in Leiden (1628-1688) und die Einführung der Kreislauflehre William Harvey's in Holland', in Van Lieburg and Toellner, *Deutsch-Niederländische Beziehungen* 39-76.

⁴⁰ Ibid., 43.

⁴¹ J. Schouten, *Johannes Walaeus, Zijn Betekenis voor de Verbreiding van de Leer van de Bloedsomloop* (1972) 14-18.

⁴² Ibid., 75-105, 111-17; G. A. Lindeboom, 'Dog and Frog, Physiological experiments at Leiden during the seventeenth century', in Th. H. Lunsingh Scheurleer and G. H. M. Posthumus Meyjes et al (eds.), *Leiden University in the Seventeenth Century, An Exchange of Learning* (1975) 279-93, here 281.

⁴³ G. A. Lindeboom, *Geschiedenis van de Medische Wetenschap in Nederland*, 2nd edn. (1981 [1972]) 45; Van Lieburg, 'Deutsche Studenten', 43.

⁴⁴ Theo Verbeek, *Descartes and the Dutch, Early Reactions to Cartesian Philosophy 1637-1650* (1992) 15.

⁴⁵ Toellner, 'Bedeutung', 18, 20.

⁴⁶ Van Lieburg, 'Deutsche Studenten', 46-7.

1628-88, of which from the period 1610-54, under the secretary Heinsius, only a few were preserved, shows that out of around 800 dissertations (206 written by Germans), seventy are relevant to Harvey's circulation theory.⁴⁷ Several dissertations relate directly to medical practice, like the re-evaluation of phlebotomy, following the old *revulsio-derivatio* theory,⁴⁸ and use of various phlebotomy instruments which, in 1681, a Silesian medical student declared useless and 'contra circulationem sanguinis et rationem sanam'.⁴⁹ The doctrine of the circulation of the blood had its 'greatest impact on the Low Countries in conjunction with Cartesian mechanism'.⁵⁰ The substantial number of German students demonstrably involved with the introduction and development of Harvey's circulation theory (Hesse, the Palatinate, Mainz, (15); Hamburg, Schleswig-Holstein (12); Westphalia (11), Rhineland (7); and the rest of north-west Germany (7)),⁵¹ implies circulation-related university debates must have had wider repercussions on medical practice in Germany.

From the 1650s onwards, under the stimulus of Cartesianism, fundamental changes took place in medical thinking, teaching and research in the Dutch universities which, in turn, subsequently influenced developments in the medical faculties of the German universities. At Leiden the transformation was linked to the arrival of several new personalities. Joannes Antonides van der Linden (1609-64), formerly professor of medicine, botany and anatomy at Franeker University (1639-51) and at Leiden *professor medicinae et collegii practici* until 1664, was a competent clinical instructor who became noted for his claim that Harvey's theory of the circulation of the blood was merely a rediscovery of an old truth already mentioned by Hippocrates.⁵² Between 1659 and 1663, the *Hippocrates de circuitu sanguinis* was defended by his students in twenty-seven 'exercises'.⁵³ The appointment of the anatomist Johannes van Horne (1621-1670) lent much new impetus to anatomical research,

⁴⁷ Van Lieburg, 'Deutsche Studenten', 46: calculation includes German students from Austria, Alsace, Bohemia, and the Baltic States.

⁴⁸ A *revulsio* was supposed to draw a humour to a contrary place, a *derivatio* was thought to drive a humour back to a nearby part of the body.

⁴⁹ Van Lieburg, 'Deutsche Studenten', 60.

⁵⁰ Roger French, 'Harvey in Holland: circulation and the Calvinists' in Roger French and Andrew Wear (eds.), *The Medical Revolution of the Seventeenth Century* (1989) 46-86, here 47.

⁵¹ Van Lieburg, 'Deutsche Studenten', 47.

⁵² Ibid., 44; Nutton, 'Dr James's legacy', 214.

⁵³ Jaap Harskamp, *Dissertatio medica inauguralis: Leyden medical dissertations in the British Library 1593-1746, Catalogue of a Sloane inspired collection* (1998) 55, 58-9, 61, 63-4, 66.

particularly regarding the question of chylus function and distribution of lymph via the *ductus thoracicus*, demonstrating that Galen's theory of the lymph flow was wrong.⁵⁴

The most widely influential authority, from 1658 onward, however, was Franciscus dele Boë Sylvius, physician, anatomist and professor of chemistry at Leiden, whose development of an integrated iatrochemical system of medicine, based on new research in anatomy and physiology, and on clinical observation, found a large following. Most Dutch medical doctors at the end of the seventeenth century supported the chemiatic School, with some more inclined to Cartesian theories and others more to those of Sylvius, but both parties came to view the composition and consistency of the body fluids and their components, their thickening and fermentation, as the origin of all illness.⁵⁵ To a considerable extent, the same can be said for Denmark, England and Scotland,⁵⁶ France,⁵⁷ and Germany.

In Germany, influential advocates of the Cartesian-Sylvian system of the chemiatic School included the personal physicians to the Elector Friedrich Wilhelm (1620-88), Cornelis Bontekoe and Theodor Craanen, as well as the Jena professors Rudolph Wilhelm Crause (1642-1718) and Georg Wolfgang Wedel (1645-1721),⁵⁸ Günther Christoph Schelhammer (1649-1712), professor at Jena, Helmstedt and Kiel, Michael Ettmüller (1644-83) at Leipzig, Johann Jacob Waldschmidt (1644-89) at Marburg, his friend Johannes Dolaeus (1651-1707) at Geismar, and the influential Otto Tachen(ius).⁵⁹ Even if they did not subscribe to all of Sylvius's theories (Ettmüller and Wedel, for example, have been described as Eclectics),⁶⁰ they were nevertheless known as declared followers of chemiatic medicine. According to the late eighteenth century medical historian Knebel, the 'mass

⁵⁴ Lindeboom, *Geschiedenis*, 52.

⁵⁵ Kurt Sprengel, *Versuch einer pragmatischen Geschichte der Arzneykunde*, 3rd edn., 5 vols. (1821-28) IV, 389-90.

⁵⁶ Evert Dirk Baumann, *François Dele Bœ Sylvius* (1949) 202-4, for critical opponents of the chemiatic School. see 204-8.

⁵⁷ Laurence Brockliss and Colin Jones, *The Medical World of Early Modern France* (1997) 144-9; For hostile counter-reactions see Baumann, *François Dele Bœ Sylvius*, 208-9.

⁵⁸ Johanna Geyer-Kordesch, 'German medical education in the eighteenth century: the Prussian context and its influence', in W. F. Bynum and Roy Porter (eds.), *William Hunter and the Eighteenth-Century Medical World* (1985) 177-205, here 182.

⁵⁹ Tachen (no dates) trained as an apothecary in Lemgo, worked in Kiel, Danzig (1640), and Königsberg (1641), obtained his doctorate in Padua (1644) and practiced in Venice. Of his publications, the treatise *de morborum principe* (Leiden, 1671; Osnabrück, 1678) is said to have caused the 'greatest stir', claiming that all diseases originated from acids and their fermentation with alkalis, Tachen being the first to have made the so-

of blind followers of the Sylvian system contributed very greatly to its spreading in Germany'.⁶¹

Inclined towards a Cartesian-inspired physiological mechanism and building on the chemical theories of Paracelsus (1493-1541) and, in particular, Jean Baptiste van Helmont (1579-1644), Sylvius advanced a new humoral pathology in which physiological processes are seen as acid-alkali reactions, 'effervescence'⁶² and 'fermentation' are intrinsic to his chemical physiology of the body and in pathological conditions cause putrefaction.⁶³ Sylvius performed chemical experiments in his own laboratory (no facilities being provided by the university until 1669, when a chair in Chemistry was established), but he was also given to speculative theorizing in chemical hypotheses.⁶⁴

A central principle of both his medical theory and practice was the thinning and cleansing of the blood with perspiration-inducing 'chemical substances, not only acids and bases (acetic acid, saltpetre, ammonia), but also inorganic compounds (silver nitrate, zinc sulphate, corrosive sublimate (mercury dichloride), and calomel (mercury monochloride), as well as many antimony compounds such as antimony sulphides, antimony oxides, and antimony oxichlorides',⁶⁵ according to some medical historians with detrimental effects to patients: 'One can assert without injury to the truth that more lives have been sacrificed to this School of Thought than in some wars: so wrong, so extremely harmful were these hypotheses and the resulting methods of treating diseases.'⁶⁶

called 'Pathologia salsa' known. See Zedler, *Universal-Lexicon* XLI (1744) 1333-4; Gottlieb Stolle, *Anleitung Zur Historie Der Medicinischen Gelahrheit* (1731) 532.

⁶⁰ On Ettmüller see Albrecht, *Eklektik*, 368-9, on Wedel see Josef Bauer, *Geschichte der Aderlässe* (1966 [1899]) 161; On 'Eclecticism', see below, ch. III, 97-8.

⁶¹ Immanuel Gottlieb Knebel, *Versuch einer Chronologischen Übersicht der Literargeschichte der Arzneiwissenschaft: zur Beförderung und Erleichterung des Studiums derselben* (1799) 236; See also Heinrich Haeser, *Lehrbuch der Geschichte der Medizin und der epidemischen Krankheiten*, 3 vols., 3rd edn. (1875-82) II, 379-81; Sprengel, *Versuch* IV, 394-8; Baumann, *François Dele Bœ Sylvius*, 200-2, 209-11.

⁶² Sylvius, for example, explained 'bodily heat as an effervescence which was supposed to develop when bloodstreams, mixed with acid chyle, met in the heart with blood which contained alkaline bile'. See J. J. Wolter, 'Introduction', in Lunsingh Scheurleer et al, *Leiden University*, 1-19, here 11.

⁶³ Sprengel, *Versuch* IV, 336-46; Karl Sudhoff, *Kurzes Handbuch der Geschichte der Medizin* (1922) 288-91; Lindeboom, *Geschiedenis*, 92-3.

⁶⁴ Harm Beukers, 'Het laboratorium van Sylvius', in *TGGNWT* III,1 (1980) 28-36.

⁶⁵ J. W. van Spronsen, 'The Beginnings of Chemistry', in Lunsingh Scheurleer et al, *Leiden University*, 330-43, here 335; Knebel, *Versuch*, 236.

⁶⁶ Sprengel, *Versuch* IV, 336; Kurt Sprengel (1766-1833), though acknowledged for his excellent comprehensive universal history of medicine, as a proponent of 'dynamism' condemned everything contrasting with his own vitalist views in a 'very one-sided, unjust way, particularly the exact efforts of the seventeenth century'. See *HBL* 1st V, 493-4.

Sylvius made important anatomical discoveries and during his fourteen-year professorship carried out no less than 300 dissections.⁶⁷ His ‘union of excellent anatomical, clinical and chemical knowledge and investigative enterprise came to typify the best of Dutch chemical experimental medicine’.⁶⁸ Chemical investigations and anatomical-physiological experiments on living dogs, frogs and rabbits carried out by his most gifted students⁶⁹ to test their validity, were not always objective, nor conclusions always correct while Galen’s faulty system of physiology still pervaded medical thought. Lindeboom argues, though, that at a time when Francis Bacon, ‘usually credited with introducing the inductive method into science, had not as yet a clear idea of the heuristic value of a hypothesis’, physiological experiments for testing a hypothesis were already in use at Leiden.⁷⁰ Despite its limitations, for over half a century, it has been claimed, ‘one of the most innovative and important contributions of medical research at Leiden was in the area of experimental physiology, especially the functions of respiration, digestion and generation, as well as of the heart, circulation of the blood, and the nervous and muscular systems, and thus to the scientific development of medicine’.⁷¹ As Porter points out, ‘Iatrophysics (medical physics) and iatrochemistry together promised to reduce the mystery of life to questions of matter in motion. Whatever could not be weighed and measured was mysticism.’⁷²

The Sylvian so-called ‘iatrochemical’ school in Leiden, immensely influential throughout much of Europe, as far afield as Sweden, Italy and Spain, later became absorbed in the ‘mechanical’ philosophical school. Earlier discussions of the Cartesian mechanistic view of the bodily processes, of the ‘soul-body relation and animal automatism’, and a new theory of matter and the flow of body fluids, matured during the 1670s and 1680s into a *oeconomia animalis*, a mechanical-philosophical physiology that ‘dominated Leiden until

⁶⁷ Lindeboom, *Geschiedenis*, 91-3.

⁶⁸ Harold J. Cook, ‘The New Philosophy in the Low Countries’, in Roy Porter and Mikuláš Teich (eds.) *The Scientific Revolution in National Context* (1992) 115-49, here 126.

⁶⁹ Among Sylvius’s most famous students were Niels Stensen, or Steno (1638-86), Jan Swammerdam (1637-80), Renier de Graaf (1641-73), and Florentius Schuyt (1619-69). See Lindeboom, ‘Dog and Frog’, 281-9.

⁷⁰ *Ibid.*, 279.

⁷¹ *Ibid.*, 291.

⁷² Porter, *Greatest Benefit*, 228.

the time of Boerhaave'.⁷³ Its most influential exponent was Theodor Craanen, who had been professor of philosophy at Leiden University since 1670. A 'convinced Cartesian who held that Cartesian philosophy unfailingly offered the principles for an understanding of all phenomena',⁷⁴ he was removed from the philosophy faculty in December 1673 during the anti-Cartesian reaction following the overthrow of the De Witt regime and, at the same time, appointed professor of medicine and successor to Sylvius.⁷⁵ His Cartesian leanings were considered less theologically obtrusive in medicine than in the philosophy faculty.⁷⁶ Craanen taught physiology, pathology and therapy according to Cartesian scientific Principles. His published documents, keeping to the at that time popular 'standard triad of nutrition, vitality and locomotion', combine Descartes' theories on physiology and the circulation of the blood, of the pineal gland as the seat of the soul, and of the senses as a '*conjunctio* between soul and body', with Sylvian views on fermentation, effervescence, acids and alkalis.⁷⁷ Both through his teaching and the adoption of his theories in the published works of his pupils, notably Benjamin van Broeckhuysen (1647-86),⁷⁸ the Swede Johannes Broen (c. 1663-c.1703),⁷⁹ Cornelis Bontekoe, Heydentryk Overkamp, Steven

⁷³ Antonie M. Luyendijk-Elshout 'Oeconomia Animalis, Pores and Particles: The Rise and Fall of the Mechanical Philosophical School of Theodoor Craanen (1621-1690)', in Lunsingh Scheurleer et al, *Leiden University*, 295-307; Harm Beukers, 'Mechanistische Principes bij Franciscus Dele Bøe Sylvius', in *TGGNWT* V,1 (1982) 6-15, demonstrates that Sylvius also used 'mechanical and hydrodynamic principles in physiology and pathology', and that iatrochemical and iatromechanical concepts, imposed by medical historians, cannot be sharply separated into 'one camp or the other', as expressed in Cook, 'New Philosophy in the Low Countries', 144 note 32.

⁷⁴ Wolter, 'Introduction', 12.

⁷⁵ Thijssen-Schoute, *Nederlands Cartesianisme*, 226-7.

⁷⁶ *Ibid.*, 227, 271.

⁷⁷ Luyendijk-Elshout, 'Oeconomia', 298-301.

⁷⁸ Van Broeckhuysen, after several years as a military doctor in the States General army, was appointed professor of philosophy at the Illustre School of 's-Hertogenbosch. In 1682, he moved to London as physician in ordinary to King Charles II of England. [His works include: *Omnia corporis animalis* [...] (Nijmegen, 1672; Amsterdam, 1683) and *Rationes philosophico-medicae theoretico-practicae* (The Hague, 1687) [not seen]. See F. Sassen, *Het wijsgerig onderwijs aan de Illustre School te 's-Hertogenbosch 1636-1810* (1963) 76-81; Francesco Trevisani, *Descartes in Germania, La ricezione del cartesianesimo nella Facoltà filosofica e medica di Duisburg 1652-1703* (1992) 224, 226.

⁷⁹ Broen taught for a time at Leiden before departing for England around 1697. His *Opera medica* were published at Rotterdam in 1702. See Thijssen-Schoute, *Nederlands Cartesianisme*, 273-6.

Blankaart, Petrus Jens (1643-1720),⁸⁰ as well as Joannes Muys, Craanen became a widely influential figure, at any rate in the Netherlands, Germany and Scandinavia.⁸¹ In France, a comparable junction of iatrochemistry and iatromechanism is not observable before the 1690s.⁸²

However, Craanen and his followers were criticised for being excessively theoretical and doctrinaire,⁸³ notably by the Leiden philosopher, scientist and mathematician Burchardus de Volder.⁸⁴ De Volder, a correspondent of Leibniz and exceptionally acute philosophical mind, was remarkable for combining a strong emphasis on the importance of experiment with the need for rigorous theory linked to experimentation. He was the first to introduce experimental physics into formal teaching at Leiden in 1675. His demonstrations in the newly established *theatrum physicum* (one of the first in Europe) were attended by large audiences.⁸⁵ Not an empiricist in the English sense and generally classified as a (not uncritical) Cartesian,⁸⁶ he was a most effective teacher and a powerful influence on many famous medical students, including Boerhaave, Bernard Mandeville (1670-1733), Bernhard Weiß (called Albinus, 1653-1721), later professor at Frankfurt on Oder, and the leading Swedish medical authority Lars Roberg (1664-1742).⁸⁷

In his rector's address *Oratio de rationis viribus, et usu in scientiis* (1698), De Volder fiercely attacked philosophical speculations in medicine and the lack of application of advances in physics to medicine. He stressed the need for knowledge of mathematics for

⁸⁰ Thijssen-Schoute, *Nederlands Cartesianisme*, 351-4: Jens, a staunch Cartesian, though for many years a practising physician at Dordrecht, published mainly on philosophical issues, including, in 1697, a refutation of Spinoza's conception of substance. See also *NNBW* X, 435.

⁸¹ A. Luyendijk-Elshout, 'Theodor Craanen (1620-89)', in Wiep van Bunge et al (eds.), *The Dictionary of Seventeenth and Eighteenth-Century Dutch Philosophers*, 2 vols. (2003) I, 227-8; Luyendijk-Elshout, 'Oeconomia', 296-7, 301-2.

⁸² Brockliss and Jones, *Medical World*, 148-9, 151, 418-22.

⁸³ Johann Samuel Ersch and Johann Gottfried Gruber (eds.), *Allgemeine Encyclopaedie der Wissenschaften und Künste* (1774-97 [1818-89]) part 1, XX, 75, describe Craanen as being 'so blindly dedicated to Sylvian doctrines and Descartes' philosophy and theory that he adjusted the copper plates in his *Tractatus physico-medicus de homine* (Leiden 1689; Naples, 1727) to his hypotheses.

⁸⁴ Luyendijk-Elshout, 'Oeconomia', 302-3; Boerhaave, in his funeral oration for Bernhard Albinus (Leiden, 1721), commented on Craanen's superficial way of teaching physiology and the diagnosis of illnesses by deduction from Descartes' theories. See F. L. R. Sassen, 'Het geestelijk klimaat te Leiden ten tijde van Boerhaave' in *Herman Boerhaave 1668/1968* (1968) 1-22, here, 12-13.

⁸⁵ C. De Pater, 'Experimental Physics', in Lunsingh Scheurleer et al, *Leiden University*, 309-27.

⁸⁶ Thijssen-Schoute, *Nederlands Cartesianisme*, 52-60.

⁸⁷ Åke Dintler, *Lars Roberg, Academiska sjukhusets grundare* (1959).

the proper understanding of the mechanistic method, in his view indispensable to the study of medicine, as well as for more rationalistic research. This should be free of antiquated misleading concepts such as ‘occult qualities, innate heat and primigenial humour’ and fashionable vague generalities, attributing biological processes to ‘a certain disposition of minute particles, a certain configuration of pores, a certain aetherial substance’, according to De Volder, ‘numerous words that make no sense whatever’.⁸⁸ Although it has been claimed that at Leiden ‘the establishment of the mechanical philosophical school of medical thought in the last decades of the seventeenth century created an exceptionally unfavourable context for empirical research’,⁸⁹ De Volder’s own experiments, motivating a large number of students, and the intensive anatomical experiments of Charles Drélincourt (1633-97), Anton Nuck (1650-92)⁹⁰ and Lucas Schacht (1634-89)⁹¹ at Leiden University surely count as evidence against this assumption.

Bedside teaching had, however, declined under Craanen and Drélincourt, despite pressure from the Curators.⁹² The introduction of clinical teaching at Leiden, in 1636, represented an important change in university medical education. The shift from purely theoretical instruction to applied medicine with accompanying courses of anatomy, surgery, botany, and pharmacy, originated in Padua with Battista da Monte (1498-1552) from 1543.⁹³ First attempts to introduce clinical teaching at Leiden go back as far as 1591, when Jan van Heurne (1543-1601), who had studied in Padua under Da Monte’s successors Degli Ottoni and Bottoni, proposed its introduction in Leiden but without success. No new initiatives were taken for forty-five years until the opening of Utrecht University, in March 1636, when Willem van (der) Straaten (1593-1681) announced in his inaugural lecture that he intended to introduce bedside teaching.⁹⁴ Soon afterwards a *Collegium medico-practicum* was established at Leiden with six male and six female beds at the ‘Caecilia Gasthuis’ at the disposal of the clinical instructors who also were able to perform dissections in a small room

⁸⁸ De Pater, ‘Experimental Physics’, 318; Luyendijk-Elshout, ‘Oeconomia’, 304.

⁸⁹ Ibid., 305.

⁹⁰ Lindeboom, ‘Dog and Frog’, 289-91.

⁹¹ Boerhaave, in the funeral oration for Albinus (1721), expressed admiration for Schacht’s expertise in clinical instruction. See Sassen, ‘Geestelijk klimaat’, 12.

⁹² P. C. Molhuysen, *Bronnen Tot De Geschiedenis Der Leidsche Universiteit IV* (1682-1725), (1920) 24, 28.

⁹³ Lindeboom, *Geschiedenis*, 81.

⁹⁴ Ibid., 83.

next to the entrance. While clinical bedside teaching declined in Utrecht soon after Van Straaten's nomination as personal physician to Prince Frederik Hendrik (1584-1647; Stadholder 1625-47), it was kept up at Leiden, although with some difficulty.⁹⁵ Hermann Boerhaave is often wrongly credited with being the first medical professor in northern Europe to establish a clinical course.⁹⁶ Before him Dele Boë Sylvius had already, and with considerable renown, taught clinical practice for fourteen years (1658-72) on a daily basis to large numbers of students.⁹⁷ Later, Albrecht von Haller, in fact, when discussing a report praising hospital practice in Stockholm, where skilled surgeons treated the sick in the presence of medical students as Boerhaave had, adds the remark 'though all too seldom'.⁹⁸ Sylvius, in an *Epistola Apologetica* against Anton Deusing (1612-66), professor of medicine at Groningen, described in his own time as an old-style 'anatomicus theoreticus non practicus',⁹⁹ explains that he himself had used a 'completely unusual method' with his students by taking them to the hospital every day on visits to see patients, introducing their symptoms, or letting patients describe their ailments. After discoursing at length, Sylvius would then ask students to comment on the nature of the patients' complaint and most appropriate treatment, and sometimes let the best qualified conduct the diagnosis and prescribe the remedy.¹⁰⁰

At the universities of Groningen, Franeker, and Harderwijk, clinical bedside teaching was never established. Regular practice-oriented clinical teaching at university level, and systematic scientific approaches to disease management in hospitals, initiating the 'modern' medical curriculum, are said to have been mainly an eighteenth century phenomenon, involving a 'restructuring of hierarchies, of training, examinations and qualification' by

⁹⁵ Lindeboom, *Geschiedenis*, 83-4.

⁹⁶ Laurence Brockliss, 'Curricula', in De Ridder-Symoens, *Universities* II, 563-620, here 611.

⁹⁷ Lindeboom, *Geschiedenis*, 81, 83.

⁹⁸ Johann Jacob Römer and Paul Usteri (eds.), *Des Herrn von Hallers Tagebuch der medizinischen Litteratur der Jahre 1745-1774*, 3 vols. (1789-91) I, entry:1747, 303-5.

⁹⁹ M. J. van Lieburg, 'De medische faculteit en de ontwikkeling van de medische wetenschap. Een studie van de Groningse academische geschriften uit de jaren 1614-1714', in Huussen (ed.), *Onderwijs en Onderzoek*, 31-83, here 36-7.

¹⁰⁰ Jacob Friedrich Reimann, *Versuch einer Einleitung In die Historiam Literariam Derer Teutschen*, 6 vols. (Halle, 1713) VI, 621; Willem Otterspeer, *Groepsportret met Dame II. De vesting van de macht, de Leidse universiteit, 1673-1775* (2002) 132; See also Harold Cook, *Trials of an ordinary Doctor, Joannes Groenevelt in Seventeenth-Century London* (1994) 64.

‘curricula emphasis on medical science’.¹⁰¹ Arguably, the importance of Sylvius as a formative force, from the late 1650s, with regard to clinical teaching and the development of medicine based on scientific principles, has not been given enough prominence in modern medical history writing. As has been shown, in the seventeenth and early eighteenth century many German medical students and doctors studied at the Dutch universities and Sylvian hypotheses of secretion, fermentation and digestion, in conjunction with Cartesian mechanism, were absorbed and subsequently taught in German universities, notably at Jena, Marburg, Leipzig, Wittenberg, Frankfurt on Oder, and longest and most consistently at Duisburg. The Sylvian acid-alkali theory in particular, as is obvious from numerous publications in Dutch and German, pervaded medical thinking even longer than that.¹⁰² Claims that his influence ‘began to fade rapidly after 1672’, therefore do not seem justified.¹⁰³

iii) Cartesianism in German Medical Faculties

In general, the reception of Cartesianism in the philosophy and medical faculties in the German universities has, until recently, been little studied. Francesco Trevisani, who has done some of the most detailed recent research, in 1992 spoke of the ‘old and the new silence of historians on the subject of Descartes in Germany’, meaning that at no stage had the impact of Cartesianism on the development of German thought and science been given much emphasis.¹⁰⁴ Clearly the picture was very mixed, with a great deal of usually theologically inspired opposition to Cartesian ideas and an anti-Cartesian stance prevailing at many, and possibly at most, German universities in the philosophy and theology faculties. It appears that only at Duisburg, and for periods Heidelberg, were the philosophy faculties predominantly Cartesian in orientation.

In the medical faculties, however, Dutch Cartesian influences seem to have been

¹⁰¹ Johanna Geyer-Kordesch, ‘Comparative difficulties: Scottish Medical Education in the European Context (c. 1690-1830)’, in Vivian Nutton and Roy Porter (eds.), *The History Of Medical Education In Britain* (1995) 94-115.

¹⁰² Sylvius’s acid-alkali theory, applied to the body fluids, in fact ‘anticipate[d] the discovery of the influence of the pH on the physiology of the human body’. See Van Spronsen, ‘Beginnings of Chemistry’, 335.

¹⁰³ Ibid.; Luyendijk-Elshout, ‘Oeconomia’, 298.

pervasive at many universities, not only at Duisburg, Heidelberg (until 1716), Marburg, Rinteln (from 1673).¹⁰⁵ Königsberg and, eventually, Frankfurt on Oder, where often Dutch-university-trained scholars taught medicine infused with Cartesian philosophical principles, but also, as shown in particular by Trevisani, at Leipzig and even Wittenberg, despite that university's reputation as a bastion of Lutheran orthodoxy.¹⁰⁶ The markedly stronger position of Cartesian mechanist ideas in the medical than in the philosophy and theology faculties in Protestant Germany was a pattern replicated also in Lutheran Sweden.¹⁰⁷

Although by 1720 there were around thirty universities in the Holy Roman Empire, the great majority were well to the west of the River Oder and also outside the north-western region. More than half of these were small and stagnant institutions, lacking internationally reputed professors and up to date facilities. It has been estimated that around 1700 there were some 9000 students at the German universities, yielding an average of only around 290 per institution, but, given the uneven distribution, many had less than one hundred.¹⁰⁸ A combination of dogmatic scholasticism and adverse circumstances, especially wars and lack of funding, prevented the majority from sharing in the rapid growth and enhancement of prestige enjoyed by larger and more dynamic institutions such as Leipzig, Jena, and, after 1694, Halle (see Table 2).

Table 2. Annual Student Matriculations

University	1700	1710
Leipzig	755	408
Jena	532	753
Halle	461	590
Wittenberg	-	270
Königsberg	180	143
Frankfurt/Oder	131	99

Source: Hartmut Boockmann, *Wissen und Widerstand, Geschichte der deutschen Universität* (c. 1999) 168.

¹⁰⁴ Trevisani, *Descartes in Germania*, 13, 17.

¹⁰⁵ Gerhard Schormann, *Academia Ernestina, Die Schaumburgische Universität zu Rinteln an der Weser 1610/21-1810* (1982) 219-22.

¹⁰⁶ Francesco Trevisani, 'Johann Gottfried Berger (1659-1736), Cartesianisches und Okkasionalistisches in seiner Neurophysiologie', in *Sudhoffs Archiv* LXIII (1979) 45-70, here 51, 55.

¹⁰⁷ Israel, *Radical Enlightenment*, 36-8.

¹⁰⁸ Maria Rosa di Simone, 'Admission', in De Ridder-Symoens, *Universities* II, 285-325, here 304.

Several universities where Cartesian and specifically Dutch influences were strong in the late seventeenth century might, in other circumstances, have had a greater impact on German intellectual life. Heidelberg (founded 1385), for example, was severely disrupted by repeated French invasions of the Palatinate, after 1672, and Greifswald (founded 1456), after 1648 under Swedish rule, suffered comparably in the late seventeenth and early eighteenth century from Sweden's involvement in major wars, attracting few students.¹⁰⁹ Consequently, even many of the older and more prestigious universities, including Heidelberg, Greifswald, and Tübingen (founded 1476), often failed to sustain a high academic reputation or attract outstanding students during the Early Enlightenment period. Albrecht von Haller, who had studied medicine at Tübingen for fifteen months (1724-5), found, 'There was nothing I could do here properly. In all [student] societies the same idlers, the same drinkers. The professors lacked either zeal or erudition. My money would have been wasted in profitless expense. Of Holland, I heard nothing but praise.' Boerhaave's works seemed 'master pieces', so Haller decided to go there.¹¹⁰

a) Königsberg University

The exceptionally high proportion of German speaking students from regions east of the Oder attending the Dutch universities during the Early Enlightenment would clearly seem to be linked to the paucity of Lutheran universities, apart from Königsberg, across this wide area. The geographical distance and travel costs involved may often have been a sufficient reason to make the bulk of the German universities west of the river Oder seem less attractive to students in the east Baltic area than those of the Netherlands which were more easily reached by sea. The East-Prussian university of Königsberg (founded in 1544), consequently, was by reason of its great distance from other German universities, something of a category to itself. Until the late seventeenth century the

¹⁰⁹ Israel, *Radical Enlightenment*, 31-3, 128-9; Sigwald Bommer, 'Die Medizinische Fakultät in den ersten vier Jahrhunderten', in *Festschrift zur 500 Jahrfeier der Universität Greifswald*, 2 vols. (1956) II, 273-82; Heinrich Haeser, *Zur Geschichte der medicinischen Fakultät Greifswald* (1879) 8-9.

¹¹⁰ E. Hintzsche, *Albrecht Hallers Tagebücher seiner Reisen nach Deutschland, Holland und England 1723-1727* (1948) 14.

‘new philosophy’ is said to have rarely asserted itself there against a fiercely defended Aristotelianism.¹¹¹ Members of the medical faculty such as Christoph Tinctorius (1604-62), Georg Wosegin (1624-1705), Daniel Beckher the Younger (1627-70), Georg Loth, the Younger (1623-84), all of whom were several times rector of the university,¹¹² were known as *redivivi Aristotelici et Galenici*.¹¹³ Others, like the more experiment-oriented Johannes Loesel [Löselius; died 1655] tried to introduce new ideas in chemistry and reportedly carried out two public dissections, but medical teaching at Königsberg remained largely antiquated and dominated by ‘superstition, alchemy and Aristotle’.¹¹⁴

Though information is rather sparse, towards the end of the seventeenth century the indications are that Cartesianism, and with it experimental physics and the ‘new’ medicine, came more to the fore. The precise impact of the exceptionally widely travelled Daniel Christoph Beckher (1658-91) who gained his doctorate at Utrecht in 1684 and was professor at Königsberg from 1686 until his early death, remains unclear.¹¹⁵ But Johann Gottsched (1668-1704), professor of medicine and physics from 1701,¹¹⁶ and Georg Emmerich (1672-1727) who gained his doctorate at Leiden and found general recognition for his *Theeologia*, advocating the beneficial effects of drinking tea (possibly suggesting the influence of Bontekoe), judging from references to them and their various publications, do appear to have been Cartesians. The same is true of Christoph Cunrad (1671-1709) who also had a Leiden doctorate and lectured on *opiatorum usus et abusus* (one of the few who, like Bontekoe, advocated its use as the most effective analgesic), and of Georg Friedrich Wagner (d. 1709) who explained the nature and use of chocolate, ‘*insignem quorundam Medicinam*’.¹¹⁷ Other professors teaching medicine at Königsberg, like Johann Heinrich Starcke (1651-1707), Johann Friedrich Starcke (died 1723), and Georg Rast (1651-1729), also had Leiden

¹¹¹ Götz von Selle, *Geschichte der Albertus Universität zu Königsberg in Preußen* (1944) 98-100.

¹¹² Walter Hubatsch, *Die Albertus Universität zu Königsberg in Preussen* (1966) 74-7.

¹¹³ Von Selle, *Geschichte*, 100.

¹¹⁴ Ibid.

¹¹⁵ Daniel Heinrich Arnoldt, *Ausführliche und mit Urkunden versehene Historie der Königsbergischen Universität*, 2 vols. (1746) II, 328-9.

¹¹⁶ Ibid. 330; *HBL* 2nd II, 808.

¹¹⁷ Von Selle, *Geschichte*, 122.

doctorates.¹¹⁸ Though nothing can be said of their doctrinal allegiance they certainly must have had a detailed knowledge of the new mechanist approach to medicine and the relevant Dutch polemics and debates.

During the first decades of the eighteenth century Cartesian influences gave way to other mechanistic approaches and in particular to Boerhaave's 'clinical eclecticism'¹¹⁹ which remained strong for several decades and tended to prevail over the 'Stahlian animism' dominant at Halle, expounded by Georg Ernst Stahl.¹²⁰ The marked decline of Königsberg University after 1700 with student numbers receding from about 1000 in 1700 to 460 in 1716, and 331 in 1725,¹²¹ was doubtless due to several factors, especially the impact of the 'Great Northern War' (1700-21), which severely disrupted much of the eastern Baltic area, the ruthless recruitment methods of the Prussian army,¹²² and the tendency of the court in Berlin, from 1694 onwards, to favour and support Halle rather than the other Prussian universities. The highly critical report of the Königsberg physics professor Christian Gabriel Fischer (1686-1751) about the poor standards in all faculties, having himself studied philosophy and theology there in an 'atmosphere of decline', provides the fullest account of that period.¹²³

In 1725, Fischer submitted a detailed reorganization plan for the improvement of the university, clearly identifying the causes of its decay. His description of the facilities at the medical faculty, which he considered particularly chaotic, indicates that several important teaching devices had not only deteriorated but never been instituted. As in all the other faculties there was no library. An anatomical theatre, planned since the 1619 statutes, or a botanical garden, did not exist, a hospital for bedside teaching was not at hand, 'the chemist has no laboratory equipment, the pharmacist no material'.¹²⁴ In the teaching sphere,

¹¹⁸ Arnoldt, *Ausführliche [...] Historie*, 327-8, 332.

¹¹⁹ Boerhaave, next to medicine thoroughly grounded in chemistry, botany, mathematics and philosophy, managed to 'synthesize the various conflicting traditionalist and modernist theories of his time [...] into a unified system which made wide-spread appeal.' See Lester King, *The background of Herman Boerhaave's Doctrines* (1965) 1-20.

¹²⁰ Schneppen, *Niederländische Universitäten*, 108 note 248.

¹²¹ Dr. Predeck, 'Ein verschollener Reorganisationsplan für die Universität Königsberg aus dem Jahre 1725', in *Altpreußische Forschungen* (1927) Jahrgang 4, Heft 2, 65-107, here 90.

¹²² Ibid., 91; Von Selle, *Geschichte*, 124-5.

¹²³ Predeck, 'Verschollener Reorganisationsplan', 67.

¹²⁴ Ibid., 74, 76.

theory has turned into ignorance, practice into obvious quackery. Among the *docentibus* there is the grossest negligence and disorder, of *discentibus* the greatest scarcity - rarely there are more than ten - but public bunglers and medical oxen exist in abundance. The professors don't read anything [...] the anatomist is too delicate and does not want to besmirch his hands, the botanist is too tired from his work to go out botanizing into the field [...]. Only the extraordinary professors read, who, however, have no facilities and no instruments; they thus have to become theoreticians and lose courage, or vociferously court the peoples' favour.¹²⁵

Studying was 'mere pretence', Fischer complains, subsequent travels did not increase knowledge, a medical student rarely got to see a patient before being called as a doctor. Scarcity of good physicians attracted foreign quacks who 'sweet-talk people and are considered great heroes; the consequences are botched-up jobs and worthless cures'. In the philosophy faculty, a thoroughly confused situation prevailed, with Eclectics, Cartesians, Pietists, and Wolffians, all battling each other, providing more strife and bafflement than clarity, and little guidance for the students. 'After the Aristotelian fence had been torn down', Fischer laments, 'the young are driven into the desert.'¹²⁶

Fischer's far-sighted reorganization plans won the initial approval of King Friedrich Wilhelm I (1688-1740) but foundered on the influence of the anti-Wolffian Pietist faction at Halle who also gained dominance at Königsberg, and succeeded in turning the king's favour into Fischer's sudden dismissal, accusing him of being an 'adherent of the prohibited teachings of the philosopher Christian Wolff and an atheist'.¹²⁷ On 17 November 1725, he was ordered to leave Königsberg within 24 hours, and Prussia within 48 hours.¹²⁸ Consequently, no improvements were instituted except for an anatomy theatre, built in 1738, at the personal expense of the anatomy professor C. Georg Büttner.¹²⁹ Fischer, having returned to Königsberg after several years, noted in 1739 that teaching at the medical faculty was 'still wholly confined to lecturing and dictating'.¹³⁰

¹²⁵ Predeck, 'Verschollener Reorganisationsplan', 76.

¹²⁶ Ibid.

¹²⁷ Ibid., 65; On the anti-Wolffian Pietist faction at Halle see below ch. III, 101.

¹²⁸ Carl Hinrichs, *Preussentum und Pietismus, Der Pietismus in Brandenburg Preussen als religiös-soziale Reformbewegung* (1971) 423-4.

¹²⁹ Arnoldt, *Ausführliche [...] Historie* II, 289; Von Selle, *Geschichte*, 124.

¹³⁰ Predeck, 'Verschollener Reorganisationsplan', 104.

b) Duisburg University

At the other extremity of Brandenburg-Prussia, the new university of Duisburg, founded by the Great Elector on 15 October 1654, being close to and, as a Calvinist area culturally linked to the Netherlands, might have developed into a major intellectual gateway to the West. The university was mainly Reformed in character and set up in deliberate opposition to nearby Catholic institutions such as the Jesuit colleges in Emmerich and Düsseldorf, and the university of Cologne. It was, however, open to all confessions tolerated within the Empire and thus also to Catholics.¹³¹ Whilst still a civic high school, Duisburg was already a noted centre of Cartesian influence. The Elector's stadholder at Cleves welcomed, in 1651, the philosopher-theologians Johann Clauberg (1622-65) and Christopher Wittichius (1625-87), noted champions of Cartesian philosophy, and gave them full freedom to teach and write in the new manner. Clauberg's increasingly large audience in fact prompted the opening of the university for which plans had already existed since the 1540s.¹³² Not until 1641, at the request of the estates of Cleves and Mark to 'no longer have to send their children abroad for the benefit of higher education', were they revived and, supported by the stadholder Johan Maurits of Nassau-Siegen (1604-79), finally realized.¹³³

Unlike other Brandenburg-Prussian universities, Duisburg was from the outset regulated by curators on the Dutch model and dominated by Cartesianism.¹³⁴ It is striking that the influx of Cartesianism into Brandenburg-Prussia (as into the Palatinate and German-speaking Switzerland) came almost entirely from the Netherlands rather than from France or elsewhere. Under Clauberg and Wittichius, both of whom had studied in the Dutch Republic, Duisburg, despite opposition from the Reformed synod of Cleves which repeatedly condemned Cartesianism in the late 1650s¹³⁵ but, between 1657 and 1662, lost all influence over the direction of academic affairs,¹³⁶ was the first German university to reflect the decisive change from scholastic to the 'new

¹³¹ Von Roden, *Universität Duisburg*, 61; Koch, 'Brandenburg-Prussia', 151.

¹³² Conrad Varrentrapp, *Der Grosse Kurfürst und die Universitäten* (1894) 14-16.

¹³³ Von Roden, *Universität Duisburg*, 61; Born and Kopatschek, *Alte Universität*, 20-6.

¹³⁴ Carl Renatus Hausen, *Geschichte der Universität und Stadt Frankfurt an der Oder* (1800) 81.

¹³⁵ Walter Ring, *Geschichte der Universität Duisburg* (1920) 108.

¹³⁶ Trevisani, *Descartes in Germania*, 35-7.

philosophy'. Criticism was met by the Elector with the reply, given also on other occasions,¹³⁷ that none of his professors were obliged to justify their teaching before any synod or church assembly.¹³⁸ The Elector's liberal attitude towards Cartesian philosophy, although paralleled by Karl Ludwig, Elector of the Palatinate (ruled 1649-80), is remarkable in the wider European context.¹³⁹

Duisburg suffered a serious setback with the devastation of Cleves by the French in the 1670s, and after 1700 receded increasingly to a minor status, but during the 1650s and 1660s was one of the most innovative universities in Germany with some revival also in the 1680s and 1690s.¹⁴⁰ Duisburg University was geographically particularly suited to mediate between Germany and the Dutch universities. The close contacts that existed between Duisburg and Dutch academic life were reflected in the fact that many of its professors like Wittichius, the theologian Petrus van Maastricht (1630-1706), the renowned philologist Johann Georg Graevius (1632-c.1705), and several of the medical professors went from Duisburg to the United Provinces, and vice versa, though the Dutch universities always exerted a much stronger attraction for both academics and students. In the period 1655-1818, six of the 109 professors at Duisburg were called from the Dutch universities to Duisburg, and twenty-three from Duisburg to the Netherlands.¹⁴¹ Of the first ten professors of the medical faculty at Duisburg nearly all had studied at Dutch universities, especially Leiden, but also at Utrecht, Franeker and Groningen (see Table 3).

¹³⁷ Ring, *Geschichte*, 108.

¹³⁸ Varrentrapp, *Grosse Kurfürst*, 17.

¹³⁹ Johann Friedrich Hautz, *Geschichte der Universität Heidelberg*, 2 vols. (1980 [1862-4]) II, 206, 230.

¹⁴⁰ Von Roden, *Universität Duisburg*, 325; Varrentrapp, *Grosse Kurfürst*, 18.

Table 3. The Professors of Medicine at Duisburg (1655-1711)

Name	Studies	Doctorate	At Duisburg	Faculty
Johann Bernhard Daniels († 1666)	Zutphen	1652 Harderwijk	1655-1661	Medicine
Wiricus Scriba (1624-71)	Groningen, Franeker Utrecht, Leiden	1646 Leiden	1657-1671	Medicine Hebrew
Theodor Craanen (1620-88)	Leiden, Utrecht, Duisburg (Philosophy & Med.)	1657 Duisburg	1657-1661	Medicine Philosophy Mathematics
Tobias Andreae (1633-85)	Herborn, Duisburg, (Philosophy) Groningen, Leiden (Philosophy & Med.)	1659 Duisburg Philosophy & Medicine	1662-1669	Medicine, Philosophy, Natural Science
Jonas Barbeck (1631-70)	Bremen	1655 Duisburg	1665-1670	Medicine
Friedrich Gottfried Barbeck (1644-1703)	Duisburg, Leiden	1669 Duisburg (Philosophy) 1670 Duisburg (Medicine)	1671-1703	Medicine, From 1676 Philosophy
Johann Adolf von Gostorff (1640-93)	Duisburg, Heidelberg, Leiden	1663 Duisburg	1677-1693	Medicine
Theodor van de Graeff (no dates)	Leiden	1676 Leiden	1689-1692	Medicine
Heinrich Christian von Hennin (1658-1704)	Utrecht (History, Classical Philology, Medicine) Franeker (Medicine)	1681 Franeker	1693-1704	Medicine, History, Greek, Natural Sciences
Martin Johann Haesbaert (1662-1711)	Utrecht & Cassel (Pharmacy) Marburg, Heidelberg, Basel, Gießen, Strasbourg (Medicine)	1679 Marburg	1704-1711	Medicine

Source: Ring, *Geschichte*, 169-73; Von Roden, *Universität Duisburg*, 262-6; G. A. Lindeboom, *Dutch Medical Dictionary, A biographical Dictionary of Dutch Physicians and Surgeons 1475-1975* (1984) 381.

¹⁴¹ Schneppen, *Niederländische Universitäten*, 41.

Several aspects of their training in the Netherlands were reflected in the development of medical teaching at Duisburg. The initiative for a botanical garden, laid out in 1658 on university grounds behind the main auditorium on the Leiden model, came from Wiricus Scriba. The *hortus medicus* was evidently well maintained until the beginning of the nineteenth century.¹⁴² Botany, as well as anatomy and chemistry, also found support under Scriba's successor, Friedrich Gottfried Barbeck. Although no lecture time tables exist for the university's early years, he was reportedly an industrious and popular scholar who, from 1676, also taught Cartesian philosophy to 'large audiences'.¹⁴³ In 1669, Barbeck defended a set of classic Cartesian hypotheses that 'no difference between space and body exists' [spatium et corpus realiter non differunt], that 'the quantity of motion in the world is always the same' [eadem semper est quantitas motus in mundo], and that the 'pineal gland is the seat of the soul' [glandula pinealis est sedes animae].¹⁴⁴ Thirty-six disputations were held under Barbeck's chairmanship.¹⁴⁵ Declining professorships at Groningen and Leiden, Barbeck remained in Duisburg expounding Cartesian views until his death in 1703.¹⁴⁶ A notable if brief acquisition was Theodor Craanen, professor of medicine, philosophy and mathematics at Duisburg from 1657 until 1661, when he moved to the Nijmegen civic high school from where, in 1670, he transferred to Leiden. With the successive presence of Barbeck, Craanen, and Tobias Andreae,¹⁴⁷ teaching medicine and philosophy, Cartesianism predominance across the faculties became even more marked. In Germany, even among those universities receptive to Cartesianism, the continuous Cartesian dominance at Duisburg, from the 1650s to around 1720, was an exceptional phenomenon.

Anatomical studies at Duisburg were mainly limited to theoretical lectures and demonstrations with the help of drawings or figural display. Andreae is known to have been a keen anatomist, but the difficulty of obtaining corpses was a notorious problem. A rare exception was the dissection of the corpse of a 'peregrinating studiosus' who had died

¹⁴² Von Roden, *Universität Duisburg*, 197.

¹⁴³ Ring, *Geschichte*, 172.

¹⁴⁴ Trevisani, 'Medizin', 207, 220 note 31a.

¹⁴⁵ Ring, *Geschichte*, 172.

¹⁴⁶ Ibid., 171; See Trevisani, 'Medizin', 207, 220 note 31.

¹⁴⁷ Ibid., 207, 220 note 29. According to Trevisani, dissertations under Tobias Andreae are 'hard to find'. A rare example located by him, *De Homine Microcosmico* (Resp.: H. Dulcken), (Duisburg, 1665) th. I, argues that 'physiology is analogous to the mechanical principles of movement in the universe'.

at the Duisburg *Gasthaus* (hospital) in 1681.¹⁴⁸ Lack of facilities at Duisburg prompted Andreae to move to 's Hertogenbosch, in 1669, to learn the method of preserving corpses, developed by the controversial self-taught anatomist Lodewijk de Bils (1623-69),¹⁴⁹ who claimed to have dissected 'more than a thousand dogs and over sixty human corpses'.¹⁵⁰ Andreae's *Breve extractum actorum in cadaveribus Bilsiana methodo praeparatis* (1669), reflecting De Bils's methods, was published at Duisburg,¹⁵¹ where his anatomical preparations survived at Duisburg until 1700. Von Roden suggests his anatomical research show Andreae to have been the kind of scientist under whom this branch of medicine might have flourished at Duisburg.¹⁵²

Several reasons may be given for the Duisburg medical faculty's poor facilities and ultimately meagre success. Duisburg's first three medical professors, Daniels, Scriba, and Craanen, had no particular interest in anatomical research; but worse still was the poor financial basis of the university, a major cause of the lack of scientific activity.¹⁵³ In 1676, the budget of the medical faculty only consisted of seventy *Reichsthaler* (twenty *Rtlr.* for the botanical garden and twenty-five *Rtlr.* each for anatomical instruments and for the chemical laboratory).¹⁵⁴ There are indications of a modest attempt to construct an anatomy theatre in 1683, and a catalogue numbering seventy-one anatomical, surgical and chemical instruments, anatomical preparations and other visual aids, but how much use was made of the anatomy devices remains uncertain.¹⁵⁵ Only in 1726 was a building designated for anatomical purposes, a chapel in the grounds of the Salvator-Church, also called the 'small auditorium' used for university lectures.¹⁵⁶

Lack of funding, inadequate professorial salaries,¹⁵⁷ and the impossibility of competing effectively with the nearby Dutch universities, at any rate before the second quarter of the eighteenth century, meant that Duisburg's medical faculty, met with only

¹⁴⁸ Von Roden, *Universität Duisburg*, 210.

¹⁴⁹ *Ibid.*, 200.

¹⁵⁰ Lindeboom, *Geschiedenis*, 52.

¹⁵¹ Peter J. Mennenöth, *Duisburg in der Geschichte des Niederrheinischen Buchdrucks und Buchhandels bis 1820* (1970) 218.

¹⁵² Von Roden, *Universität Duisburg*, 200.

¹⁵³ Born and Kopatschek, *Alte Universität*, 38-9, 66.

¹⁵⁴ Von Roden, *Universität Duisburg*, 201.

¹⁵⁵ *Ibid.*, 210.

¹⁵⁶ Born and Kopatschek, *Alte Universität*, 32-3.

¹⁵⁷ *Ibid.*, 38-9, 66.

limited success in terms of attracting medical students. Nevertheless, in the 1720s, with 44 medical students, Duisburg easily surpassed universities such as Heidelberg with eighteen and Freiburg with nineteen.¹⁵⁸ Total student numbers for Duisburg University between 1652 and 1811 (5944) which failed to reach an average sixty matriculations per year even when student numbers were at their height in the 1690s,¹⁵⁹ were certainly small compared to most German, let alone the Dutch, universities but, as has been shown, only the three or four largest German universities attracted significantly more than a hundred students per year.¹⁶⁰ A further obstacle restricting Duisburg's growth, and contributing to its eventual decay in the eighteenth century, was the unwillingness of the court in Berlin, after the period of Johan Maurits, to lend as much support to Duisburg as to the universities of Frankfurt on Oder and Halle.

c) Frankfurt on Oder University

The mercantilist plans of the Brandenburg-Prussian court to turn Frankfurt on Oder into the main crossroads between Germany and eastern Europe,¹⁶¹ nevertheless had only modest success as far as the university was concerned. During the Thirty Years War this university had lapsed into severe decay.¹⁶² Since the beginning of the Great Elector's rule student numbers had risen from 86 in 1640, and 82 in 1641, to an annual average of 243 students during the five years 1642-46 but, as at most German universities, the medical faculty left much to be desired. In 1666 the Elector reproached the two medical professors Ursinus and Polisius in Frankfurt on Oder that for many years no 'exercitia publica' had been held, to which they answered that in 26 years they had, after all, held seven 'promotiones doctorales', while their predecessors in the course of 40 years had only come up with eight!¹⁶³

With the appointment of Tobias Andreae (1674), after five years at 's Hertogenbosch,

¹⁵⁸ Von Roden, *Universität Duisburg*, 325; Schneppen, *Niederländische Universitäten*, 109.

¹⁵⁹ Von Roden, *Universität Duisburg*, 324-5.

¹⁶⁰ Boockmann, *Wissen und Widerstand*, 168.

¹⁶¹ Jonathan Israel, *European Jewry in the Age of Mercantilism 1550-1750*, 3rd revised edn. (1998 [1985] 204-5.

¹⁶² Frankfurt on Oder university, founded in 1498, opened 1506; Lutheran from 1539; Calvinist from 1613 (with Lutheran chairs maintained). See Willem Frijhoff, 'Patterns', in De Ridder-Symoens, *Universities II*, 43-110, here 84.

¹⁶³ Varrentrapp, *Grosse Kurfürst*, 13.

the much neglected study of anatomy might have received some attention but it would seem that there were no other significant improvements until the arrival of Albinus in 1680. The lack of anatomical material remained acute. Irenaeus Vehr (1646-1710), pupil of the great anatomist Werner Rolfinck (1599-1673) at Jena University, was only able to carry out four or five dissections during his professorship (1676-1710) at Frankfurt on Oder.¹⁶⁴ Although there are indications of Cartesian influence at Frankfurt on Oder as early as the 1650s, it is with the arrival of Andreae (a pupil of Clauberg), who reputedly promoted Cartesian doctrine in his teaching with great zeal, that the real impact of Cartesianism as a force for reform in medical thinking and teaching made itself felt.¹⁶⁵ Andreae stayed in Frankfurt for six years, leaving for Franeker in 1680.

Under Albinus in particular the reputation of the Frankfurt medical faculty was evidently considerably enhanced.¹⁶⁶ Albinus stands as a classic instance of the entwining of academic career structures between Brandenburg-Prussia and the Netherlands. Having studied under De Volder, Drélincourt, Schacht, and Craanen, he obtained his medical doctorate at Leiden in 1676. Later, after twenty-two years at Frankfurt and at court in Berlin, he returned to Leiden in 1702 and became one of the most renowned members of the medical faculty there.¹⁶⁷ Sadly, despite his efforts towards the improvement of the anatomy theatre, in 1684,¹⁶⁸ Albinus reportedly performed his last dissection in 1683.¹⁶⁹ A botanical garden was laid out in the 1680s on the orders of the Great Elector, presumably also on the advice of Albinus.¹⁷⁰ Albinus was especially formative as a teacher rather than as a writer or researcher. The responsiveness of the university to new developments in medicine, as well as in other areas, and to the views of the court in Berlin, was strengthened in 1692 with the introduction by the Great Elector of curators on the model of Duisburg and the Dutch universities. Its first curators were the highly influential ministers Paul von Fuchs (1640-1704) and Eberhard von Danckelmann (1643-1722).¹⁷¹

¹⁶⁴ J. S. Löwenstein, 'Biographien und Schriften der ordentlichen Professoren der Medizin an der Hochschule zu Frankfurth a. O. in den Jahren 1506-1811', in *Janus, Zeitschrift für Geschichte und Literatur der Medizin*, 3 vols. (1848) III 283-315 and 419-43, here 419-20.

¹⁶⁵ Sassen, *Wijssgerig onderwijs*, 353-4; Thijssen-Schoute, *Nederlands Cartesianisme*, 129, 531, 556.

¹⁶⁶ Hausen, *Geschichte*, 17-18.

¹⁶⁷ Ruestow, *Microscope*, 83, 86.

¹⁶⁸ Haeser, *Lehrbuch II*, 280; Hausen, *Geschichte*, 75; Baas, *Outlines*, 557.

¹⁶⁹ *Ibid.*, 556; Predeck, 'Verschollener Reorganisationsplan', 105.

¹⁷⁰ Hausen, *Geschichte*, 132.

¹⁷¹ *Ibid.*, 81.

d) Marburg University

Marburg (founded 1529) was unusual in having alternated in different periods after the Reformation, down to the mid-seventeenth century, between the Lutheran and Calvinist confessions according to the shifting policies of the rulers of Hesse-Cassel. From 1629 onwards, Marburg was predominantly a Calvinist institution and, like Heidelberg in the 1660s and 1670s, an early focus of Dutch Cartesian influence in Germany, even if pressure from the Reformed theological faculty, in 1653, led to an official ban on teaching Cartesian philosophy.¹⁷² In the 1670s, however, the Reformed theologians at Marburg, Reinhold Pauli (d. 1682) and Samuel Andreae (1640/9-99), whose studies at Duisburg and Heidelberg and close intellectual contacts with Leiden and Groningen had exposed them to Cartesian ideas, were more concerned with fighting anti-Trinitarian Socinianism and its rejection of all church dogma, including Calvinist predestination, than Cartesian philosophy, so that the ban came to be largely forgotten.¹⁷³ Thus Johann Jacob Waldschmidt, personal physician and councillor to the Landgrave, a follower of the theories of Le Bœ Sylvius and Descartes, and appointed professor of medicine at Marburg in 1674, as well as, in 1682, to the chair in physics,¹⁷⁴ was able to develop his Cartesian medical theories relatively undisturbed.

Known as a 'philosophus and medicus eclecticus' whose allegiance was said to oscillate between Aristotle, Descartes and others,¹⁷⁵ and reportedly a 'faithful follower' of Bontekoe, Waldschmidt in some cases went even further than his Dutch role-model, as in his praise of tea.¹⁷⁶ Trevisani, in investigating how far German Cartesian medical doctors at the end of the seventeenth and beginning of the eighteenth century based their scientific enquiry on Cartesian principles, shows that Waldschmidt at Marburg, like Tobias Andreae and Friedrich Gottfried Barbeck at Duisburg, Johannes Bohn (1640-1718) and

¹⁷² Heinrich Hermelink and Siegfried August Kaehler, *Die Philipps-Universität zu Marburg 1527-1927, Fünf Kapitel aus ihrer Geschichte 1527-1866* (1927) 297, 299-331.

¹⁷³ Ibid., 302-4.

¹⁷⁴ Waldschmidt had studied medicine at Giessen, Vienna, Prague, and other German universities for ten years, obtained his doctorate at Giessen, in January 1667, and practiced in Hanau for seven years. See Stolle, *Anleitung*, 302; Haeser, *Lehrbuch* II, 380.

¹⁷⁵ *Monatliche Unterredungen Einiger guten Freunde von allerhand Büchern und andern annehmlichen Geschichten* [periodical] (Leipzig, 1696) Feb. 1689, 168.



Johann Friedrich Ortlob (1661-1700) at Leipzig,¹⁷⁷ Bernhard Albinus at Frankfurt on Oder, and Johann Gottfried Berger (1659-1736) at Wittenberg,¹⁷⁸ relied heavily on Cartesian concepts (sometimes modified in an ‘Occasionalist’ direction)¹⁷⁹ as the correct basis for medical science. According to a Marburg dissertation, titled *Medicus Cartesianus* (1687), ‘no progress in medicine is possible without knowledge of philosophy’,¹⁸⁰ and medicine can only become a science, Waldschmidt insists, by ‘instituting a knowledge of causes’.¹⁸¹

Trevisani suggests disputations such as the *Chirurgus Cartesianus detegens aliquot in Chirurgia errores, hactenus ex ignorantia Philosophiae commissos* (Marburg, 1687) are based on Bontekoe’s *Nieuw Gebouw der Chirurgie* (1680; German transl. 1687), and the *Praxis Chirurgica Rationalis* (published in parts from 1683) by Joannes Muys, expounding ‘surgery from the principles of the great Descartes’.¹⁸² Its defender, Wilhelm Hulderich Waldschmidt (1669-1731), son of Johann Jacob, ‘detecting some errors in surgery in as far as they are committed from ignorance of philosophy’, approvingly cites Dolaeus, Craanen, Blankaart, Bontekoe, and the ‘erudite’ notes of his German translator Johann Peter [Petrus] Albrecht.¹⁸³ ‘But who, I pray, is there among the common run of surgeons’, asks Wilhelm Hulderich, ‘who knows about acid and to whom [...] is the correcting or absorbing remedy of acids known?’¹⁸⁴ The *Diatriba Inauguralis De Acidularum usu Earundem que vero*

¹⁷⁶ Zedler, *Universal Lexicon* XLXXX (1745) 536; *Sammlung von Natur-und Medicin* [periodical] for full title see ch. III, 119, Dec. 1717, 450; See also below, ch. VI.

¹⁷⁷ Ortlob studied medicine at Frankfurt on Oder and in Leipzig under Bohn, obtained his doctorate in Leipzig in 1684, continued to study in Leiden under Drélincourt and under Nuck in England. He returned to Leipzig in 1686 where he became professor of anatomy and physiology in 1691. See *HBL* 2nd IV, 447; Trevisani, ‘Johann Gottfried Berger’, 52.

¹⁷⁸ Berger studied mathematics and medicine at Jena under Wedel (1677-82) at the same time as Friedrich Hoffmann and Georg Ernst Stahl. After obtaining his doctorate (1682), Berger continued to study under Bohn at Leipzig (1684-88). As professor of botany and anatomy at Wittenberg (1688), as well as pathology (1693), and medicine (1695), Berger became highly regarded for his work in physiology, based on a largely Cartesian mechanistic model equating the human body to a hydraulic-pneumatic machine; but he did not agree with Descartes’ theory of blood fermenting in the heart, or of the function of the pineal gland for the distribution of the *spiritus animales*. See Trevisani, ‘Johann Gottfried Berger’, 46-51.

¹⁷⁹ Occasionalism as a modification of Cartesianism was developed in particular by Arnold Geulincx whose *Ethica* were published by Bontekoe in 1675 (see ch. II note 3 below); further on the medical relevance of ‘Occasionalism’ see Trevisani, ‘Johann Gottfried Berger’, 46-70.

¹⁸⁰ Trevisani, ‘Medizin’, 205, 219 note 21.

¹⁸¹ *Ibid.*, 205, 218-19 note 20.

¹⁸² Trevisani, ‘Medizin’, 208, 220 note 34, 221 note 39.

¹⁸³ Waldschmidt, *Chirurgus Cartesianus*, 7-8, 10, 12.

¹⁸⁴ *Ibid.*, 9.

operandi (Marburg, 1685) by Martin Harmes (1663-90)¹⁸⁵ also likewise illustrates the pervasive influence of the Sylvian acid-alkaline conception of physiology at Marburg.

Earlier, not long after arriving at Marburg, Waldschmidt had initiated a *Collegium Disputatorium Publicum*, held between February and July 1675. Its participants adopted Cartesian mechanical principles, comparing the human body with a clock and explaining its functioning from the order of its parts. The direction of movement of the ‘animal spirits’ is seen as being dependent on the soul, located in the brain’s pineal gland.¹⁸⁶ As with Dutch Cartesians, concerned with systematizing medicine on the basis of Descartes’ corpuscularism and Harvey’s blood circulation theory, and attributing the origin of most illnesses to blood circulation problems or quantitative changes of the blood components, so with Waldschmidt, Barbeck, Andreae, Bohn, Albinus, and their medical candidates, Sylvian chemiatic hypotheses like fermentation, effervescence, and the acid-alkali balance in the body, became integral to their medical physiological reasoning. Acids, accordingly, combined with alkaline salts because the latter were elongated porous shapes into which the knife-like sharp and sour acids could wedge themselves, the process of fermentation producing geometrical square, hexagonal, rhombic or hooked shapes depending on their state of saturation. Obstructions, ulcers, stones, the *Scharbock*, for example, but also epilepsy, hypochondria, and melancholia or depression, were caused by ‘acrimonious’, unsaturated components in the blood, organs or other body parts. Thus mental and physical ailments are reduced to physiological causes, mostly requiring chemical medication, the soul being exempt from any remedial capacity by some,¹⁸⁷ while others attributed epilepsy, mania, and melancholia to circulation problems, and to the soul the ability to affect the blood circulation,¹⁸⁸ an instance of so-called Stahl’s ideas already taking shape some years before Stahl’s own development of an animist-vitalist conception of physiology.¹⁸⁹

A critical opponent of Sylvian chemiatic principles, Johannes Bohn, city physician, and

¹⁸⁵ Harmes obtained his doctorate at Marburg, allegedly with a *Dissertatione de usu acidularum* (1687) (see *HBL* 1st III, 58) which, however, is not listed among the dissertations presided over by Waldschmidt. See Friedrich Wilhelm Strieder, *Grundlage zu einer hessischen Gelehrten und Schriftstellergeschichte seit der Reformation bis auf gegenwärtige Zeiten*, 21 vols. (1781-1868) XV, 431-7.

¹⁸⁶ Trevisani, ‘Medizin’, 207-8, 220 note 32.

¹⁸⁷ *Ibid.*, 210-11. For titles of medical disputations and dissertations defending these theories between 1675 and 1703, see pages 221-2 notes 44-60.

¹⁸⁸ *Ibid.*, 213, 224 note 76.

¹⁸⁹ See below, ch. III, 105-8.

since 1669 professor of anatomy and physiology at Leipzig (as well as from 1699, dean of the medical faculty), an influential iatromechanist, was one of the first to provide experimental evidence thoroughly disproving some of Sylvius's most 'fundamental' tenets concerning the 'sour ferments in the stomach, pancreas and gall'.¹⁹⁰ Bohn, disputed the reliability of the sense organs to define alkaline or sour substances and argued that 'not every effervescence requires alkaline elements', while at the same time trying to harmonize chemical reactions with Cartesian mechanistic conclusions about energy, movement and heat production in the human body.¹⁹¹

In 1675, Tobias Andreae, then at Frankfurt on Oder, likewise began to see the Sylvians' battle between acids and alkalis existing 'more in their imagination than in the thing itself' [magis in illorum imaginatione quàm in se ipsa re].¹⁹² Albinus, also at Frankfurt on Oder, Berger at Wittenberg, and Ortlob at Leipzig, became increasingly aware of the difficulty of combining Cartesian corpuscular theory with a still largely defective physics and chemistry which eventually led to the decline of Sylvian ideas based on fermentation and effervescence, as well as Descartes' influence on certain aspects of physiology, though his mechanist conception of the human body long retained its centrality in medical thought. Berger, for example, who stands out as an 'eminent representative' of the Cartesian stream in German medical thought at the end of the seventeenth and early eighteenth century, was a Cartesian, Trevisani points out 'not because he adopted [Descartes'] physiology in any way but because he embraced his methodological approach and considered his concept of the independence of the bodily from the spiritual to be correct'.¹⁹³

The physiology of pores and vessels once more gained greater importance, and it is not surprising that for Albinus, a pupil of Craanen, the 'degree of acidity in saliva depends solely on pore density',¹⁹⁴ and almost all diseases are due to obstructions.¹⁹⁵ Digestion becomes the

¹⁹⁰ ADB (1876) III, 81; Heinrich Haeser, *Grundriss der Geschichte der Medicin* (1884) 232.

¹⁹¹ Trevisani, 'Medizin', 212, 222 note 61; On Bohn's neuro-physiology and mechanist concept of the *anima sensitiva* (in contrast to Descartes' *spiritus animales*) for the explanation of physical and psychic causality see Trevisani, 'Johann Gottfried Berger', 53-4.

¹⁹² Trevisani, 'Medizin', 212, 223 note 66.

¹⁹³ Trevisani, 'Johann Gottfried Berger', 69-70.

¹⁹⁴ Trevisani, 'Medizin', 213, 223 note 70.

¹⁹⁵ Ibid., 213, 223 note 71.

product of ‘ventricle contraction’ rather than effervescence,¹⁹⁶ and the qualities of tea, praised by Bontekoe and Waldschmidt, are now esteemed not for ‘promoting fermentation but on account of their diaphoretic and astringent virtue’.¹⁹⁷ The pineal gland, no longer the seat of the soul, in animals or humans, becomes simply a sensory organ,¹⁹⁸ and its Cartesian attributes were finally condemned, in 1784, by the Duisburg professor of medicine Johann Gottlob Leidenfrost (1715-94) as ‘fabula Cartesiana’.¹⁹⁹ For the perception of truth God remains the sole guarantor.

At Marburg, the anti-Cartesian position laid down in the university statutes of 1653 was reasserted after the arrival, in 1687, of the domineering Huguenot theologian Thomas Gautier (1638-1709) who with fierce determination opposed the innovative teachings of the experimental scientist and inventor Denis Papin (1647-1710), a Huguenot compatriot, formerly ‘temporary curator of experiments’ of the London Royal Society. Papin, since 1688 professor of mathematics at Marburg, lectured on hydraulics, the Copernican astronomy, and physics of Robert Boyle and Christiaan Huygens on the basis of Cartesian principles and the ‘new philosophy’. While their ensuing wrangles did not fully explode until 1692,²⁰⁰ protests against those who ‘talk about nothing else but the path to atheism paved by *Cartesio*’ while most ‘certainly not having read a single page of Descartes’ works’, already found anonymous expression in a pamphlet published in 1687,²⁰¹ alarming and enraging the Reformed clergy at Cassel as well as the university theology faculty. Its author further contended that ‘the *Aristotelici* could not resolve a single problem with their principles’ and attributed their uninformed condemnation of the ‘new philosophy’ to either ‘intellectual indolence’ or ‘insincerity’. Particularly taken amiss was the fact that the pamphlet was written in German and thus accessible to the broad public where, it was feared, ‘high and low, great and small, will rapidly ignite with fiery zeal against non-Cartesians’, dealing them the same fate ‘as the Reformed in France who either had to deny the truth or flee’.²⁰²

An exchange of pamphlets between the defender of Cartesianism, identified as

¹⁹⁶ Trevisani, ‘Medizin’, 213, 224 note 72.

¹⁹⁷ Ibid., 213, 224 note 73.

¹⁹⁸ Ibid., 211, 222 note 59, 214, 224 note 80.

¹⁹⁹ Ibid., 208, 220 note 33.

²⁰⁰ Hermelink and Kaehler, *Philipps-Universität*, 304-9, 313-18.

²⁰¹ Ibid. 309-10: [Waldschmidt], *Copia eines Schreibens an eine hohe Stands-Person in Teutschland von der Cartesianischen Philosophie und Coccejanischen Theologie* [not seen].

²⁰² Hermelink and Kaehler, *Philipps-Universität*, 309-11.

Waldschmidt (by then three times rector of Marburg University), and a spokesman of the Reformed clergy at Cassel, resulted in an investigative ‘commission concerning the Cartesian philosophy’ decreeing an apology from Waldschmidt to the clergy and a prohibition, under threat of fine of 100 *thaler*, not to ‘stir this matter again’.²⁰³ Waldschmidt appears not to have taken the reprimand too seriously for, in 1688, with his friend Johannes Dolaeus,²⁰⁴ he published their *Epistolae* on medical and philosophical issues discussing *inter alia* the use of tea, blood-letting, cupping, purging, *fontanellae*, *setons*, obstructions, fevers and other medical conditions and, in philosophical matters, included ‘some bitter pills for the spiritual ministry’.²⁰⁵ Forty-two of the 65 or so disputations held under Waldschmidt’s presidency were published as *Disputationes medicae varii argumenti omnia ad mentem Cartesii* (Frankfurt, 1695; 1707, Naples, 1727; 1736) after his death.²⁰⁶ Waldschmidt’s career was cut short when, at a military camp before Mainz, he died from dysentery at the age of forty-five in August 1689.²⁰⁷

From 1692 onward, however, Gautier’s vehement anti-Cartesian stance and opposition to any perceived heterodoxy within the theology and philosophy faculties scandalized the university with offensive strategies ‘calumniose et diabolice’. Gautier, as minister of the small Huguenot community at Marburg, went so far as to exclude the Cartesians Papin and Georg Otho (1634-1713; professor of Greek and oriental languages at Marburg since 1679) from communion, leaving all involved parties ‘pecciert’ [piqued].²⁰⁸ Papin, frustrated by his unsuccessful application for the chair in physics, vacant since Waldschmidt’s death and given, instead, to Johann Daniel Dorstenius (1643-1706; extraordinary professor of medicine

²⁰³ Hermelink and Kaehler, *Philipps-Universität*, 311-12.

²⁰⁴ Dolaeus studied Aristotelian and Cartesian philosophy, as well as medicine, at Heidelberg (1669), also studied medicine in Sedan/France (1670), in London under Thomas Sydenham, at Oxford under Thomas Willis (1671), in Leiden under Le Bœ Sylvius, Drélincourt, Schuyt, and Craanen, and obtained his doctorate at Heidelberg in 1673. He became Councillor and first Physician to the Landgrave of Hesse-Cassel and especially well known for his four-volume *Encyclopaedia Medicinae Theoretico-Practicae* (Amsterdam, 1686), reflecting his commitment to the iatro-chemical tradition of Van Helmont and Sylvius. See Strieder, *Grundlage* III, 169-79.

²⁰⁵ Johann Jacob Waldschmidt and Johannes Dolaeus, [*Epistolae Amoibaiai, sive*] *Dissertationes Epistolicae De Rebus Medicis et Philosophicis, quae Medicinam Rationalem et Philosophicam Intellectualem, Nec non Inventam novam, et Experimenta Physica, Anatomica, Chymica Ut et Libros ab Eruditis hinc inde in Europa nuper editos, aliaque abstrusioris et selectioris argumenti concernunt* (Frankfurt, Leiden, 1688; Frankfurt, 1689); Hermelink and Kaehler, *Philipps-Universität*, 313.

²⁰⁶ Strieder, *Grundlage* XV, 431-7.

²⁰⁷ Haeser, *Lehrbuch* II, 380; Strieder, *Grundlage* XV, 429-30.

²⁰⁸ Hermelink and Kaehler, *Philipps-Universität*, 313-23; E. Wintzer, *Dénis Papin’s Erlebnisse zu Marburg 1688-1695* (1898) 33-56.

at Marburg since 1673, and ordinary professor since 1678), left the university in 1695 and returned to England in 1709.²⁰⁹

Gautier's obdurate persistence succeeded, in August 1702, in reversing the Landgrave's decree of 20 December 1701 granting the philosophy faculty 'libertas philosophandi' to teach Cartesian philosophy within philosophical confines, by accusing Otho of Socinianism and thereby contravening university statutes as well as endangering 'confessional peace', which once again restricted philosophical liberty.²¹⁰ Even if Otho, professor also of mathematics since Papin's departure and of physics since the death of Dorstenius (1706), managed after Gautier's death (1709) to teach physics 'from the philosophical principles of the illustrious Descartes', Gautier, by suppressing any serious scientific endeavours for so long, had, as noted by the Landgrave himself, caused the university to 'fall rather into decadence', a setback not reversed until the arrival of Christian Wolff, in 1723.²¹¹

e) Halle University

More than any other German university, Halle, inaugurated in July 1694 with 700 students, rising by the early 1740 to 1500 students, epitomizes the central thrust of the Early German Enlightenment.²¹² Set up on the initiative of the electoral court in Berlin, it was a product of several divergent reforming impulses – cameralist, Thomasian academic, and Pietist - but within a broadly traditional framework of princely government and undogmatic Protestant faith. Its essential message was one of adjustment and gradual change rather than a sweeping transformation of society and culture.²¹³ In contrast to the Enlightenment in France, England and elsewhere, in Germany a handful of universities, including (besides Halle) Jena, Leipzig, Marburg, Duisburg and, from 1737, Göttingen, from the outset played a guiding and shaping role.²¹⁴

²⁰⁹ Strieder, *Grundlage* III, 191; Hermelink and Kaehler, *Philipps-Universität*, 318.

²¹⁰ *Ibid.*, 324-7.

²¹¹ *Ibid.*, 327-31.

²¹² Israel, *Radical Enlightenment*, 129; Geyer-Kordesch, 'German medical education', 185-96; Gagliardo, *Germany*, 194-5.

²¹³ Notker Hammerstein, 'Zur Geschichte der Deutschen Universität im Zeitalter der Aufklärung', in Hellmuth Rössler and Günther Franz, *Universität und Gelehrtenstand 1400-1800* (1970) 145-82, here 146-9.

²¹⁴ Gagliardo, *Germany*, 228-30, Israel, *Radical Enlightenment*, 128-30.

At Halle, the novel dynamic element that rapidly turned the university into the most successful and influential university in Protestant Germany had little to do with its visible structures. It had no proper library in the early period, nor any other purpose-built facilities at its disposal. Lectures were held, and examinations sat, in the professors' private houses. There was no anatomical theatre until 1727.²¹⁵ Haeser states that even the new universities long continued to suffer from lack of anatomical material. At Halle, in the five years 1712-17, only one single corpse was dissected, and even the anatomy chamber, provided by the magistracy for a yearly rent of ten *thaler*, was taken away from the faculty. Here, as elsewhere in Germany, it continued to be the inadequacy of anatomical instruction in the German universities that drove the students to Paris and Leiden.²¹⁶ Compared to Leiden, 'science' was at a low level.²¹⁷

Nevertheless, a striking feature at Halle was the exceptionally large medical faculty, from 1710, with over 300 students and two full professors (after 1718 three), making it, next to Leiden and Paris, one of the largest in northern Europe.²¹⁸ With Friedrich Hoffmann (1660-1742) and Georg Ernst Stahl (1659-1734), its first medical professors, Halle emerged as the most influential centre of medical instruction in Germany. Both Hoffmann and Stahl had studied under the chemical experts Rudolph Wilhelm Crause and Georg Wolfgang Wedel at Jena (founded 1548/58) who taught the iatrochemical theories of Dele Boë Sylvius.²¹⁹

Halle's exceptional success seems to have been almost entirely due to the care given to selecting the professors from amongst the foremost and most renowned Protestant scholars, the high salaries they were paid, and the relative freedom of thought and research permitted by the authorities in Berlin.²²⁰ Even if Stahl was opposed to Cartesian dualism and the 'mechanist' views of Boerhaave (and his adherents) at Leiden,²²¹ and Hoffmann, during the 1680s, became opposed to the Sylvian chemiatic system and significantly influenced

²¹⁵ Hilde de Ridder-Symoens, 'Management and Resources', in De Ridder-Symoens, *Universities II*, 154-209, here 195.

²¹⁶ Haeser, *Lehrbuch*, II, 280.

²¹⁷ Geyer-Kordesch, 'German medical education', 196.

²¹⁸ *Ibid.*, 183, 196.

²¹⁹ *Ibid.*, 182.

²²⁰ Peter A. Vandermeersch, 'Teachers', in De Ridder-Symoens, *Universities II*, 210-255, here 228-9.

²²¹ Geyer-Kordesch, 'German medical education', 182; See below ch. III, 105-8.

German medical opinion,²²² interaction and debate with Dutch medical views was nevertheless still a significant aspect of their medical outlook. Hoffmann, one of the most renowned and influential German medical scholars and physicians, in his *Medicus Politicus* (1738), explicitly urged medical students to visit the Dutch universities.²²³

²²² Sprengel, *Versuch* IV, 401-5; See below, ch. V, 185-7.

²²³ Schneppen, *Niederländische Universitäten*, 108.

Chapter Two

Dutch Cartesian Medical Reformers

i) Cornelis Bontekoe

Among the group of Dutch physicians aiming to reform traditional medicine and practice on the basis of Cartesian philosophical and Sylvian iatrochemical principles during the last quarter of the seventeenth century, Cornelis Bontekoe, alias Dekker¹ (1647-85),² was the most abrasive and dismissive of traditional medicine, as well as the most well-known and popular. Bontekoe was born in Alkmaar, where he began his medical career as a surgeon's apprentice. From 22 September 1665 until 6 May 1667 he studied medicine and philosophy at Leiden under Dele Boë Sylvius, Van Horne, and Arnold Geulincx (1624-1669).³ A bright and eager student but penniless, having gone to Leiden against his guardians' wishes, Bontekoe became a favourite student of Le Bœ Sylvius. He obtained his doctorate with a *Disputatio chirurgico-medica inauguralis de gangraena et sphacelo* (1667) and built up a flourishing practice in Alkmaar. Having no confidence in the local apothecaries and their 'great many useless, old, stale, and badly made concoctions sold at high prices',⁴ he prepared his own drugs, much to their annoyance.⁵ Bontekoe's reputation as a competent physician and surgeon was confirmed when, on request of resentful adversaries, local magistrates asked for the supervision of Le Bœ Sylvius at one of Bontekoe's surgical operations which Sylvius declined, expressing full confidence in his former disciple.⁶

In 1668, Bontekoe's fortunes changed with the death of his wife and two daughters.

¹ Bontekoe's father, Gerrit Jansz. Dekker, was a corn merchant whose sign-board portrayed a spotted cow (Bonte Koe), on account of which he became known as Bontekoe, a name also adopted by Cornelis, his son. See Thijssen-Schoute, *Nederlands Cartesianisme*, 278.

² Extensive research by Thijssen-Schoute moved Bontekoe's birth date from 1640 to 1647. See *Nederlands Cartesianisme*, 276-80.

³ Arnold Geulincx, professor of philosophy, was one of the most significant and original Dutch interpreters of Cartesianism and had a particularly strong influence on Bontekoe who later edited his works, the complete *Ethica* (1675) published under the pseudonym 'Philaretus'.

⁴ Cornelis Bontekoe, *Alle De Philosophische, Medicinale En Chymische Werken [...] behelsende een afwerp der ongefondeerde medicyne, chirurgie, en pharmacie der oude geneesheeren; neffens den opbouw van een ware philosophie, medicyne, en chemie, dienende om de gezondheid lang te bewaren* (Amsterdam, 1689) 298 [Referred to from now on as *Werken*].

⁵ Heydentryk Overkamp, *Reden Over het Leven en de Doot Van de Heer Cornelis Bontekoe* (Amsterdam, 1685) 5.

His second marriage having ended in divorce soon after, Bontekoe spent some time in De Rijp, a village in North Holland, where he studied in particular the works of Descartes. The impact of Descartes' works on Bontekoe is portrayed by his friend and biographer Heydentryk Overkamp almost like a religious conversion. Before Descartes, old and confused concepts obstructed truth. Now truth was revealed through the Cartesian light of reason, supported by God as the guarantor of clear and distinct ideas.⁷ Bontekoe became an enthusiastic though not uncritical Cartesian and, attracted by the fame of Theodor Craanen who taught medicine on mechanistic Cartesian principles at the university, Bontekoe registered again on 27 April 1674. As a senior scholar, giving private tuition to more junior students, he was banned, on 18 December 1675, from holding private classes and attending disputations and university lectures, on account of his abrasive and disruptive opposition to Aristotelian philosophy and science. Being of a tenacious nature, he registered again at the university, this time as a qualified medical doctor, on 24 February 1676.⁸

During his subsequent five-year period in The Hague, where he treated patients with enviable success, Bontekoe alienated many of his medical colleagues by scorning their 'unscientific' practices and publishing his ideas on medical reform peppered with abrasive criticism. Bontekoe was equally critical of apothecaries who, in his view, were 'the greatest quacks who do not shy away from anything'. As many people entrusted themselves to an apothecary for advice, a physician or surgeon, only being consulted when things were 'messed up' or the patient 'near to death', was faced under these circumstances with an extreme situation and accomplished little or nothing. To stop the abuses of apothecaries and their administering ineffective or deleterious medicines to patients, Bontekoe urged physicians and surgeons to prepare their own drugs or, alternatively, better supervision of all apothecaries.⁹ In Theodorus Schoon, a physician and declared Cartesian at The Hague, Bontekoe found a vocal ally in his campaign against traditionalist apothecaries. Before studying medicine at Leiden, Schoon had been employed for more than eight years by apothecaries in their 'murder-houses, handling their muck, the decomposed, expired, falsified, and mouldy medicines dispensed to the sick on prescription, and a thousand times witnessed the adulteration of preparations,

⁶ Heydentryk Overkamp, *Reden* (1685) 5.

⁷ Ibid. 7-14.

⁸ Molhuysen, *Bronnen* (1647-1682) III (1918) 314.

⁹ Bontekoe, *Nieuw Gebouw* (1680-81) Preface, F2; J.G.W.F. Bik, *Vijf eeuwen medisch leven in een Hollandse stad* (1955) 328-46; Mooij, *De polsslag*, 39.

myself assisting', Schoon admits, 'in falsely concocting them under orders of these dirt-mongers'.¹⁰

Bontekoe's first and best known work, the *Tractaat van het Excellenste Kruid THEE* (The Hague, 1678; 1679; 1685; Amsterdam, 1689), sold out within a few weeks.¹¹ Short treatises on coffee and chocolate were added to the second (1679) edition, as well as his *Apologie van den Auteur tegens sijne Lasteraars*, often said to have been written to counter the slander that he had accepted bribes from the Dutch East India Company for his advocacy of tea, for which the text, however, provides no evidence.¹² Bontekoe's convictions about the 'great powers' and the use of tea as a remedy *par excellence* met with a great deal of prejudice and abuse, particularly as his caustic style of writing, his condemnation of most medical practitioners as incompetent 'title-doctors', and the self-righteous character of his frequent digressions into theology and morality met with vehement opposition. Defending himself against these accusations, Bontekoe declared philosophical war on his opponents.¹³ One of them was the anti-Cartesian physician and alchemist Johann Friederich Schweitzer (Swetzer alias Helvetius) (1630-1709), with whom he got into a fierce contest.¹⁴ An anonymously published pamphlet of 1680, a vicious attack on Bontekoe's character, lack of religion, and competence as a physician, described him as a 'new-fangled doctor, tough, courageous, and suited to fight single-handedly the whole world and reform their phantasmagoria', and Helvetius as being 'also not short of words, and equally bold and possibly even nastier than our Cornelis'.¹⁵

The core of the wrangle between Bontekoe and Helvetius, apart from personal insults, was Helvetius's condemnation of Cartesianism as a negative influence in medicine, as in philosophy and religion, and scornful refusal to see any merit in Bontekoe's proposed reforms. Helvetius, at that time unacquainted with Bontekoe, had, in his *Theologia Christiana* decried the 'Cocceians, Cartesians, Beverlandists and others', for which Bontekoe attacked him in his new work on surgery, as well as in furious published tracts, addressing Helvetius as 'a sworn enemy of all reason and understanding

¹⁰ R. Krul, *Haagsche Doctoren, Chirurgen En Apothekers in den Ouden Tijd* (1891) 25, 27; Thijssen-Schoute, *Nederlands Cartesianisme*, 272-3, 343.

¹¹ [From now on referred to as *Tractaat*]; Bontekoe, *Tractaat* (1679) 249.

¹² Bontekoe's biographer Evert Dirk Baumann, in *Cornelis Bontekoe, De Theedoctoor* (1949) 112, refers to 'Cabanès alleging in *Remèdes d'autrefois* that Bontekoe received 25,000 *francs* pension'. However, in his article on Bontekoe in the *NNBW* VIII, 173, Baumann thinks it 'unlikely'. No supportive evidence has been supplied by more recent authors.

¹³ Bontekoe, 'Waarschouwinge' and 'Apologie', in *Tractaat* (1679) B4, 346.

¹⁴ Helvetius, originally from Koethen, in Anhalt, settled in the Netherlands as a student and gained his medical doctorate at Harderwijk (1653). See also Thijssen-Schoute, *Nederlands Cartesianisme*, 292-3.

and arch-slanderer of the two great men [Johannes] Coccejus and Descartes'.¹⁶ According to the author of the *Dialogue*, no one in The Hague cared to argue with, or oppose, Bontekoe in writing, 'all the other doctors remaining as silent as bed-wetters [...] towards such a priceless book writer of the new fashion'.¹⁷ In the eyes of Bontekoe's critics, his loud-mouthed contempt for doctors, midwives, barbers, in effect for the 'whole Dutch nation, not even sparing the present government and many ministers (always ranting and raving in their company like a mad cow with pepper in her nose)', was well-known.¹⁸ Descartes might have made doubt essential to his theory, continues the *Dialogue*, but Bontekoe had put it to work in his practice. According to Bontekoe, barbers and surgeons first had to become good Cartesians, learn to doubt and reason, in order to 'make better instruments, use their hands more gingerly, apply their dressings more expertly, recognize illness not only from outward visible signs but also its internal hidden causes, and consider more carefully what constitutes a wound, a swelling or an ulcer, before laying hands on it'.¹⁹

Bontekoe is also depicted as an opportunistic lodger with many debts who took advantage of his hosts, among others the well-known physician, surgeon and obstetrician, Cornelis Solingen (1641-87), one of the few doctors in The Hague favourably regarded by him.²⁰ Bontekoe allegedly did not pay his way, nor his debts, and once even was conveniently rescued from the sheriff by an advocate who cleared him of a 2000 *guilder* debt, it was presumed because Bontekoe had cured him of venereal disease.²¹ Bontekoe became so embroiled in quarrels that he was banned from the public anatomy sessions in The Hague for disruptive behaviour. He responded by setting up his own academic circle

¹⁵ [Anonym.] *Dialogue van een Groote Thee en Tobacq-suyper* (The Hague, 1680) 3.

¹⁶ C. Bontekoe, 'Een brief aan Jan Frederik Swetsertje [...]', in *Een nieuw bewijs van d'onvermijdelijke noodzakelijkheid en grootste nuttigheid van een algemene twijfeling nevens de reden tegen alle redelose, en redenkibbelaars, al redenerende betwist-redent* (Amsterdam, 1685) 12; See also Cornelis Bontekoe, *Brief Aan Johan Frederik Swetser, Gesegt Dr. Helvetius [...] Tot een korte Apologie voor den Grote Philosoph Renatus Descartes, En sijne rechtsinnige navolgers [...]* (The Hague, 1680).

¹⁷ *Dialogue van een Groote Thee en Tobacq-suyper*, 9.

¹⁸ *Ibid.*, 10

¹⁹ *Ibid.* 16-17; Bontekoe, *Nieuw Gebouw* (1680-81) 64.

²⁰ According to Bontekoe, Van Solingen and the surgeon/physician Jan Bruynestein (1642-86), an eye witness to the first English blood transfusion from animal to man, 'both represented the best part of the surgical profession, because "they understand that the fundamentals of surgery were medicine"', M. J. van Lieburg, 'The first Blood Transfusion to Man, Infusion Experiments, Physiological Problems and some Curiosities of Medicine in a Letter from J. Bruynestein to W. van Liebergen (1668)', in *LIAS*, XVI, 1 (1989) 43-60, here 44.

²¹ *Dialogue van een Groote Thee en Tobacq-suyper*, 27-32.

with public readings, dissections and discourses on public affairs, mathematics, surgery, and science.²²

Bontekoe's second publication, the *Nieuw gebouw van de chirurgie of heel-konst stuksgewijze op-getimmerd* (The Hague, 1680-1), in two parts, struck, according to his friend Overkamp, like a 'Hant-Garnaat' [handgrenade].²³ An avowed medical reformer who would demolish the old structure of medicine and surgery and erect a new one in its place, Bontekoe radically rejected all aspects of the 'old medicine' with its 'wrong' Aristotelian philosophy and other schools of thought. In his view, cramming medical students' heads with 'useless school philosophy' and Greek and Latin terms impeded their own reason and judgement and left them stranded on the 'shore of the wrong medicine', making them doctors by title and not through competence.²⁴ He was convinced that most medical doctors of his time were ignorant of the art of healing, as well as of the true philosophy, and that medical reform could only progress if Cartesian philosophy became inseparably linked with medicine. He professed to defend his own method of practice with 'no less courage than previously Luther and Calvin upheld the true religion against the false Roman one'.²⁵

Bontekoe acknowledged his former mentor Sylvius as 'our master who was the first to make us aware and show the way',²⁶ but was as critical of Sylvius as of most medical writers, old and new, whose works he scorned as 'guesswork and false opinions [...] patched up like a beggar's coat made of rags and scraps gathered from all corners'.²⁷ Though having a high regard for chemistry, he was equally critical of Paracelsus, Van Helmont and 'all chemists old and new', whose chemical principles were 'dark, ambiguous and incomprehensible'.²⁸ In his opinion they erred 'woefully' in conceiving of the human body as a 'laboratory in which all changes taking place in *alembici*, test-tubes and crucibles [...] also happen in the veins, arteries, heart, stomach, intestines, etc.'. ²⁹ With their 'dangerous remedies', Bontekoe insists, chemists fared 'little better

²² *Dialogue van een Groote Thee en Tobacq-suyper*, 41; Overkamp, *Reden* (1685) 18.

²³ *Ibid.*, 18.

²⁴ Bontekoe, *Nieuw Gebouw* (1680-81) D3.

²⁵ Bontekoe, 'Apologie', in *Tractaat* (1679) 346.

²⁶ Baumann, *François Dele Bœ Sylvius*, 197.

²⁷ Bontekoe, *Nieuw Gebouw* (1680-81) D3.

²⁸ *Ibid.*, C2.

²⁹ Bontekoe, *Werken* (1689) I, 198; See also the review of Bontekoe's, *Laatste reden, van afscheid Over de Koortsen, uytgesproken den 15 July 1681* [...] (The Hague, 1681) by A. J. J. Vandeveld, 'Bijdrage tot de studie der werken van den geneeskundige Cornelis Bontekoe', in *Verslagen en Mededeelingen Der Koninklijke Vlaamsche Academie vor Taal en Letterkunde* (1925) 84-129, here 97-8.

than the Galenists with their blood-letting, purging' and other methods.³⁰ Not always consistent in his views, Bontekoe elsewhere defends chemical remedies, claiming they 'are not only more pleasant and heal more powerfully than the rubbish and sops of apothecaries, but, instead of being poisonous and dangerous, they are always safer; those that speak against them do so out of ignorance and malicious intent, not wishing that illness can be healed so quickly, so commodiously, so gently and especially so safely'.³¹

Bontekoe condemned those who in their speculative theories were misled by 'qualities, wrongly contrived humours, spirits, faculties', leading them to draw wrong conclusions about the causes of illness.³² In practice, continuing on the same false basis of the 'Galenic murder practice', and occasionally leaning on 'one wobbly crutch of experience', they allowed the sick to be 'cruelly tortured and murdered with their blood-letting, cupping, bloodsuckers, and purging *à la methode vulgaire*'.³³ Surgeons had to ban from practice all 'phantoms of nature, of inborn warmth, heavenly influences, and everything based on them', for the sake of true, concrete facts. 'If one wants to have a nature', he argued, 'let it be the blood man has in his vessels which *has* an inborn warmth and great influence through its circulation.'³⁴ If 'cold' is allegedly 'a quality that freezes water *and* causes gangrene in a foot', how can a surgeon, Bontekoe asks, 'construct a good practice from such a handsome theory and from this quality deduce the quality of the remedy which he must apply?'³⁵ Equally, placing great importance on the temperaments, a 'presumed mishmash of the four qualities', neither congenital nor acquired, had led in practice to wrong assumptions, such as perceiving 'a red face, and a swollen nose full of boils and pustules to be a sign of a hot liver', and to bad methods of treating swellings, wounds and ulcers.³⁶

On the basis of the newest findings in anatomy and physiology, as well as his own (not always correct) interpretations, Bontekoe dashes numerous traditional theories. The Hippocratic theory of the four humours - blood, phlegm, bile, and melancholia [black bile] - no longer stands up to Harvey's new theory of the blood circulation. Instead of blood being warm and moist, the *pituïta* cold and moist, gall hot and dry, and

³⁰ Cornelis Bontekoe, *Kurtze Abhandlung von dem menschlichen Leben, Gesundheit, Kranckheit und Tod* (Budissin, 1686) 536.

³¹ Bontekoe, 'Apologie' in *Tractaat* (1679) 357.

³² Bontekoe, *Nieuw Gebouw* (1680-81) Preface, C, see on 'Temperaments' 19-25, 'Humours' 26-41, 'Spirits' [Geesten] 42-6, 'Faculties' 47-57.

³³ *Ibid.*, Preface. D2.

³⁴ *Ibid.*, On 'Nature', 1-11.

³⁵ *Ibid.*, 20-1, 229-38.

³⁶ *Ibid.*, 22-3.

melancholia cold and dry, all so-called humours, he asserts, are, 'moist and warm, circulating in the body, cold and dry being [exterior] factors that impede their flow'.³⁷ The spleen does not produce melancholia, or black gall, from unclean (coarse), coagulated blood, nor are gall, phlegm or melancholia responsible for the many illnesses attributed to them.³⁸ Bontekoe denies the existence of 'plethora',³⁹ effervescence in, or any blood-building or heat-producing properties of the heart,⁴⁰ a vacuum in the body,⁴¹ or the presence of the spirits *naturalis*, *vitalis*, or *animalis* in the brain and nerves, for which he derides the English physician Thomas Willis (1621-75).⁴² He disputes a more rapid circulation of the blood in fevers⁴³ and, in contrast to Blankaart and Overkamp (but like Leeuwenhoek), denies 'fermentation' or 'putrefaction' of the blood or humours in fevers.⁴⁴

Bontekoe stresses the importance of anatomical dissection and laments the prevailing 'diabolical opinion' and 'cruel superstition of *motuorum corpora non esse violanda*' obstructing its progress towards a more precise understanding of anatomy. He distinguishes between those practicing anatomical dissection who admit that there are many things they still don't understand yet and those who have 'studied little anatomy but, with their heads stuffed full of idle comments by Hippocrates, Galen, the Arabs and others, without fear or shame undertake to explain everything'.⁴⁵ It is 'not good enough', Bontekoe protests, 'to watch a dissection in an anatomy theatre together with a hundred others, but one has to practice it oneself, and not with Greek words'. Anatomy professors, employed by friends rather than for their expertise, and often 'pretentious, vain and ostentatious', explain parts of the human body already dissected beforehand, thus not contributing to a proper understanding of anatomy.⁴⁶

Inadequate knowledge of anatomy and chemistry, ignorance of medicines and the

³⁷ Bontekoe, *Nieuw Gebouw* (1680-81) 26-31.

³⁸ Ibid., 31-33, 140-9, 176, 190-1; Bontekoe, *Laatste reden* (1681) 35.

³⁹ Bontekoe, *Nieuw Gebouw* (1680-81) 187-90, 225.

⁴⁰ Ibid., 132; Bontekoe, *Kurtze Abhandlung* (1686) 42-3.

⁴¹ Bontekoe, *Nieuw Gebouw* (1680-81) 123.

⁴² Ibid., 42-6. Together with the English physician Thomas Sydenham (1624-89), Thomas Willis is among the most frequently mentioned in the contemporary medical literature.

⁴³ Bontekoe, *Laatste Reden* (1681) 13; Bontekoe, *Kurtze Abhandlung* (1686) 223-51; Bontekoe, *Werken* (1689) II, 291-358.

⁴⁴ Ibid., 299-312; Bontekoe, *Laatste Reden* (1681) 19; Bontekoe, *Kurtze Abhandlung* (1686) 161.

⁴⁵ Bontekoe, *Nieuw Gebouw* (1680-81) 97.

⁴⁶ Ibid., 100-1.

potency of simple drugs, as well as reluctance to experiment, or reliance on ‘wrong experiments’,⁴⁷ in Bontekoe’s view accounted for the many ‘gross errors and abuses’ in medicine and surgery. In its place Cartesianism, the ‘true philosophy’, provided the correct basis for medicine and surgery and the key criterion against which all previous knowledge had to be measured until certainty was reached through reasoning, careful patient observation, and scientific ‘experientia, anatomica, chymica and physica’. Medicine, as part of physics, therefore, could be ‘as reliable as mathematics based on good principles’.⁴⁸ Cartesian philosophy with its mechanistic principles was to remain a basis, however, and not to be literally translated into medicine.⁴⁹ Bontekoe urged the need for medical reform to a point at which ‘all antiquity has been surpassed’,⁵⁰ charging every practitioner to work towards building a ‘true theory, a sound practice, and a perfect surgery’.⁵¹ He blamed the inadequacies of surgery on the fact that, even in the face of frequently voiced complaints about bad surgeons, the latter obstinately refused to look for, and teach, new methods, and opposed those ready to do so. Their arrogance in proclaiming incurable those diseases which common practice could not heal was, in his view, one of the main reasons why no better surgical practice was under way and patients often handed themselves over ‘to quacks, wise women and other inexperienced people’ who, at times, showed ‘more expertise than trained surgeons and put them to shame’.⁵²

Bontekoe’s ideas on surgical practice anticipate several modern medical concepts. The general habit of treating all and even fresh wounds with caustics is condemned as harmful and interfering with the natural healing process, as they increase pain, inflammation, ulceration, cause enlargement and deepening of ulcers, and at worst fistulas. Of particular merit is his strong recommendation to abandon the usual pus-inducing methods and prevent pus-formation in wounds,⁵³ in his own time, however, an idea much disapproved of by physicians of the old medical school who believed, contrary to Bontekoe’s ‘false’ theory, that the cure of contused wounds consisted of ‘introducing

⁴⁷ Bontekoe, *Nieuw Gebouw* (1680-81) Preface A-F; ‘One must not deceive oneself with experiments and remain aware that it does not necessarily follow, if the sick are healed with a certain *Method* and the use of some *Remedies*, that their return to health is due to the effect of these remedies.’ D2.

⁴⁸ Bontekoe, *Kurtze Abhandlung* (1686) 544.

⁴⁹ Bontekoe, *Nieuw Gebouw* (1680-81) C.

⁵⁰ *Ibid.*, D2.

⁵¹ *Ibid.*, B3; Bontekoe, *Laatste reden* (1681) 77.

⁵² Bontekoe, *Nieuw Gebouw* (1680-81) B3.

⁵³ Evert Dirk Baumann, *Uit Drie Eeuwen Eeuwen Nederlandse Geneeskunde* (1964) 128; Bontekoe, *Werken* (1689) I, 276-9.

pus, bringing the wound to suppuration'.⁵⁴ One early eighteenth century German surgeon, Heinrich Walther (dates unknown) complained that since the upsurge of this 'new fangled medical practice', young surgeons, adopting the harmful instructions of (Bontekoe's ally) Overkamp for the treatment of painful inflammations and swellings, used 'heat-inducing, sharp and drying out' medicines instead of releasing the accumulating body fluids and pus, with detrimental results.⁵⁵

Other established accepted surgical treatments, such as caustic 'mundicatives', *setons* and *fontanellae* (to release 'bad humours'), are rejected by Bontekoe as contrary to all knowledge of the blood circulation, and causing more harm than good.⁵⁶ Steven Blankaart, also closely associated with Bontekoe, likewise insists on their futility, remarking those who had 'two or more, often kept open for several years, still retained their usual symptoms'.⁵⁷ Since people believed in their effectiveness, he notes that he allows all the 'stinking hole[s]' from *setons* and *fontanellae* that he comes across to heal over, without any of his patients falling ill, 'so that the people see how they are cheated'.⁵⁸ In France, the surgeon Mopillier, in his *Dissertation contre l'usage des Setons, des Cautéres, des Vesicatoires, des Ventuses, des Scarifications, des Epispastiques, et même des Sangsuës* (reviewed in the *Journal des Savans*, Dec.1744), following the French medical reformer François Quesnay [Quesnai](1694-1744) rejecting all forms of blood-letting, similarly advised against *fontanellae* because of their slow and minimal evacuation of supposedly harmful fluids. For many physicians, however, *setons* and *fontanellae* retained their therapeutic validity. Albrecht von Haller, for example, commenting on Mopillier's claims, maintained that small quantities become big quantities over months and years and that the aim is not evacuation; rather the treatment relies on the fact that 'an evacuation never occurs in two places at once. Everyone knows

⁵⁴ See, for example, Heinrich Walther, *Glücklicher Feldscherer oder Gründlicher Unterricht Von denen Kopff-Wunden [...] Allen Chirurgis, Barbierern und Badern sehr nöthig und nützlich* (Leipzig, 1718) Preface and 7-9, 18, 43.

⁵⁵ Ibid. 5-6.

⁵⁶ Bontekoe, *Werken* (1689) I, 272-8.

⁵⁷ *Setons* and *fontanellae* are artificially created purulent ulcers intended to heal or prevent diseases. A 'seton' was set by lifting a skin fold at the back of the neck with tongs, then thrusting a red-hot stylus, a two-sided small knife or lancet through it. The thus created orifice was kept open with horsehair, pig-bristles, or a silk cord often for months and even years. A 'fontanella' was affixed by burning the skin, or by means of a corrosive, and kept open with a pea or nutshell to prevent healing of the site. See S. Blankaart, *Neue Kunst-Kammer der Chirurgie oder Heilkunst*, 2nd edn. (Hannover, Hildesheim, 1690) 11-12, 90-5.

⁵⁸ S. Blankaart, *Von Würckungen Derer Arzneyen In dem Menschlichen Leibe [...] Wie auch Ein Entwurf von einer Neuen Pharmacie* (Leipzig, 1690) 289-91.

that perspiration stops diarrhoea, diarrhoea halts salivation, and blister plasters counter running eyes'.⁵⁹

Drawing heavily on the chemiatic theories of Le Bœ Sylvius who derived most illnesses from a sour corruption of the body fluids, Bontekoe's iatrochemical-mechanistic conception of the human body attributed all internal diseases, including mental disturbances, to a physiological condition he names *scheurbuik* (in German *Scharbock*) whereby the circulation is compromised through a corrosive acidity and increased viscosity and sluggishness of the blood and body fluids, causing obstruction, vascular leaking and rupture, leading to fevers, inflammations, swellings and ulcers, consumption, and in madness a confusion of the 'tubes'.⁶⁰ Bontekoe's therapy, also advocated by his allies and highly influential for decades after his death, consisted of counteracting the acidity and viscosity of the body fluids in illness, and as a preventive method, with alkaline substances and large quantities of warm fluids, minimal blood-letting and purging, emetics and perspirants when required, opium as the pain killer without equal, and tea as *the* remedy and daily beverage.

In his own time, Bontekoe was known as 'a new instigator of heresies in medicine'. A Gent physician even decried him as an 'antichrist'.⁶¹ According to the editor of the Amsterdam *Bibliothèque Universelle*, Jean Le Clerc, he was further maligned by his enemies as someone who thought it 'useless to go to church and frequent holy assemblies'.⁶² As the conflict between him and his adversaries developed, Bontekoe reports that six or seven of the physicians in The Hague, 'upholders of the old views', vehemently opposed 'me and the truth'.⁶³ Bontekoe seems to have formed something of an alliance with the Rotterdam city physician Michael Mandeville (b. 1639), father of the well-known deist radical writer and physician Bernard Mandeville. The antagonism between Bontekoe and what he called 'the old sect' reached such a point that the latter would not acknowledge him even with the most ordinary courtesies in the street, so that he and his opponents took to walking past each other in silence 'like Quakers'.⁶⁴ On one

⁵⁹ Römer and Usteri, *Herrn von Hallers Tagebuch* I, entry: 1745, 21-3.

⁶⁰ Bontekoe, *Kurtze Abhandlung* (1686) 163, 165-9.

⁶¹ Quoted in Vandevelde, 'Bijdrage [...] Bontekoe', 102-6, discussing [Pseud.] *Den Krayenden Haene van Aesculapius, ofte Kerst-Nacht Ghedachten van [...]* 1682, Door [...] *Vallesius Philiatros Medecyn tot Ghendt. Waer by ten Deelee Wederleyt wort, de verkeerd Leere van Bontekoe ende syne Naer-volghers [...]* (The Hague, 1683) [not seen].

⁶² [Le Clerc], *Bibliothèque Universelle et Historique* IV (1687) 374.

⁶³ C. Bontekoe, *Vervolg van het eerste Deel van het Nieuw Gebouw der Chirurgie Of Heel-Konst* (The Hague, 1681) Dedication.

⁶⁴ *Ibid.* 60.

occasion, reports Bontekoe, the same discourtesy was extended to Dr. Mandeville, ‘a man indeed so experienced in his science as our men of The Hague are determined not to be’, simply because he was walking at Bontekoe’s side.⁶⁵

Another aspect of the attack on Bontekoe’s reputation was to depict him as an associate of the Spinozist circle in The Hague. In order to discredit his zeal for medical reform, it was implied that he held ‘atheistic’ views and was sympathetic to Spinozism. He does actually seem to have had a close personal connection with a disciple of the philosopher Benedictus (Baruch) de Spinoza (1632-77), the renegade Reformed preacher and writer on philosophical logic Petrus van Balen (1643-90).⁶⁶ Bontekoe clearly felt obliged to reply to this slur, promising, should God give him time and opportunity, to show the world ‘what sort of atheist I am, when I shall refute that godless work of Spinoza and, at the same time, of Hobbes and Machiavelli, three of the damndest rascals that the world ever brought forth’.⁶⁷ He never denied, however, that he had some knowledge of Spinoza’s philosophy and expressly admits to having spent a good deal of time in discussion with those ‘deceivers’, ‘rascals’ and ‘atheists’, meaning Van Balen and others of Spinoza’s circle.⁶⁸ Bontekoe also reportedly visited Spinoza on his deathbed⁶⁹ and was present at the auction of Spinoza’s effects following his death, in 1677, with the intention of acquiring his books.⁷⁰

The pamphlet war, begun in The Hague, followed Bontekoe to Amsterdam,⁷¹ where he practised from 1681 (until moving to Hamburg in 1682) and, by his own account, was ‘persecuted’ by the Amsterdam *collegium medicum*, whom he accused of tyrannizing over medical practice in the city and challenged in a sharply-worded diatribe.⁷² Yet despite these wrangles, Overkamp, who visited Bontekoe in Amsterdam, after five years

⁶⁵ Bontekoe, *Vervolg* (1681) 5 v.

⁶⁶ *Dialogue van een Groote Thee en Tobacq-suyper*, 35.

⁶⁷ Bontekoe, ‘Apologie’, in *Tractaat* (1679) 349.

⁶⁸ *Dialogue van een Groote Thee en Tobacq-suyper*, 46.

⁶⁹ *Ibid.* 45.

⁷⁰ K. O. Meinsma, *Spinoza et son cercle* (1983 [1896]) 486.

⁷¹ One of the best known examples is the *Antwoord van Pieter Bernagie, Dr. Op de Brief van Kornelis Bontekoe, Doctor in de Genees-Konst* (Amsterdam, 1682), in which Bernagie (1656-99), an Amsterdam physician, argues extensively, in 96 pages, against Bontekoe’s spiteful remarks, contradictions and inconsistencies. Bontekoe, on 21 July 1682, countered by publishing a sixty-three page *Antwoord van Cornelis Bontekoe, Med. Doctor, Aan de Schryvers Van de Brief Onder de naam van Pieter Bernagie M. Dr. uytgegaan, Door welke een menigte van muggesifterien, en pretense contradictien die men sedert eenige Jaren al pratende tegens het Thee boek, het Nieuw Gebouw der Chirurgie, en de reden van Koorts, uytgestroit heeft, wederleit worden* (Amsterdam, 1682) [not seen]. See Vandevelde, ‘Bijdrage [...] Bontekoe’, 98-100.

⁷² C. Bontekoe, *Provocatie Aan alle Doctoren, Chirurgyens, Apothekers, en in’t besonder aan die van de Stadt Amsterdam* (Amsterdam, n. d. [?1681]) K1-6.

of no contact, found him to be a man of ‘eminent civility and learning’, surrounded ‘not only by physicians, surgeons, philosophers, chemists and anatomists, but even theologians, lawyers, and moralists, all of whom he gratified with pleasant, skilful and intelligent reasoning’.⁷³

On account of his short tract *Kurtzer und fester Beweis dass es kein Annus Climactericus, oder kein Mordjahr gibt, und dass dieses im 63. oder 81. Lebensjahre des menschlichen Lebens nicht gefürchtet braucht zu werden*,⁷⁴ the Elector of Brandenburg-Prussia, Friedrich Wilhelm, appointed Bontekoe Councillor and Physician in Ordinary, as well as professor at the university of Frankfurt on Oder⁷⁵ for a yearly salary of 1,052 *Reichsthaler*.⁷⁶ At the Berlin court, Bontekoe gained great repute by successfully treating the Elector’s ‘Podagra pains’ with his ‘tea cure’.⁷⁷ In Germany, beyond the Brandenburg-Prussian borders, he also became famous for popularizing the until then little known new warm beverages tea, coffee, chocolate, as well as tobacco, as medicinal aids to continual health and a long life, as discussed in his popular work in German translation, the *Kurtze Abhandlung von dem menschlichen Leben, Gesundheit, Kranckheit und Tod*, first published in German in 1685 with at least eleven subsequent editions which, of all his books, ‘caused the greatest stir’.⁷⁸ Johann Daniel Longolius, the editor of the 1719 edition, states in his preface that Bontekoe wrote the *Kurtze Abhandlung* in Frankfurt

⁷³ H. Overkamp, *Nieuw Gebouw Der Chirurgie Of Heelkonst, Getimmert of de nieuwe Beginselen vande Genees en Heelkonst* [...] (Amsterdam, 1682) Preface.

⁷⁴ Dutch edn., The Hague, 1683; German transl.: Hamburg, 1683; 1685; Blankaart, in his medical dictionary, explains the superstition about the years 63 and 81 as a ‘foolish Opinion that Men must needs die. These years fall away in the ninth year, as seven times nine make 63, and nine times nine, 81. But no Reason or Experience can persuade us, that Men are more obnoxious to Death in these Years than in others’. See S. Blankaart, *The Physical Dictionary, Wherein The Terms of Anatomy, the Names and Causes of Diseases, Chyrurgical Instruments and their Use; are accurately Describ’d* [...] 5th edn. (London, 1708) 19.

⁷⁵ Christian Wilhelm Kestner, *Medicinisches Gelehrten-Lexicon Darinnen die Leben der berühmtesten Aerzte, sammt deren wichtigsten Schriften, sonderbaresten Entdeckungen und merkwürdigsten Streitigkeiten* (1711 [1740]) 130-1, contests that Bontekoe actually taught at the university or used that title. The title page of Bontekoe’s *Korte Verhandeling van’s Menschen Leven, Gesondheit, Siekte, en Dood* (The Hague, 1684) however, clearly lists ‘Professor tot Francfurt aan der Oder’ as one of his titles. In his dedication to the Elector, Bontekoe expresses his gratitude for having been appointed not only ‘Raad en Lyf-Medicus, maar ook nog met die van Professor in de vermaarde Univerziteyt tot Frankfort aan der Oder’. Signed: ‘Cornelis Bontekoe, Med. Dr. S. E. B. Consil. Archiat. & Profess.’

⁷⁶ G. D. Schotel, *Het Oud-Hollandsch Huisgezin der Zeventiende Eeuw* (1904 [1868]) 372; *Memorie Boek van Pakhuismeesteren van de Thee te Amsterdam 1818-1918, En de Nederlandsche theehandel in den loop der tijden* [compiled by C. Bierens de Haan] (1918) 3.

⁷⁷ Stolle, *Anleitung*, 253; A. M. Luyendijk-Elshout, “Der Grosse Kurfürst” und die holländische medizinische Wissenschaft, in Van Lieburg and Toellner, *Deutsch-Niederländische Beziehungen*, 25-37, here 33.

⁷⁸ C. Bontekoe, [*Korte Verhandeling* (The Hague, 1684)] *Kurtze Abhandlung* (Budissin, 1685; 1686; 1688; new edn. 1691; 1692; 1700; 1701; 1719; Rudolstadt 1688; 1692; Leipzig, 1692; 1719); S. Blankaart, *Stephan Blancard’s Arzneiwissenschaftliches Wörterbuch* (Wien, 1788) 335.

on Oder - confirming that Bontekoe did, in fact, reside there for a time in his capacity as professor of the university.⁷⁹ His untimely death, on 16 January 1685, due to an accidental fall and fractured skull, after being summoned back to Berlin to treat a seriously ill courtier, cut his spectacular career short.⁸⁰ According to one of the German monthly journals, the Great Elector reportedly ‘much regretted his death and would have given several thousand *thaler* to save his life’.⁸¹ His funeral ceremony, ordered and paid for by the Elector, in the principal church of Berlin, took place in the presence of ‘des personnes les plus qualifiées de sa cour’,⁸² the funerary orations subsequently being published.⁸³ As one would expect, Bontekoe’s Latin, Dutch and German works are listed in the Brandenburg court library catalogue, the *Pandectae Brandenburgicae* (1699).⁸⁴

His reputation in the Netherlands was still considerable four decades after his death, as emerges from the substantial entry about him in the first major Enlightenment encyclopaedia, *Het Algemeen Historisch, Geographisch en Genealogisch Woordenboek* (1724), in which Bontekoe is described as a famous and well-known physician and publicist of the use of tea, coffee, and tobacco. According to this report, his works were so eagerly read that even the unfinished treatises found among his papers were immediately printed piecemeal after his death.⁸⁵ In general terms, Bontekoe’s reputation seems to have been spreading during the later 1680s and 1690s. When, in 1698, a French translation of his *Korte Verhandelng* (1684) appeared, it was remarked that those most knowledgeable in medicine ‘have not hesitated to place his various treatises among those productions of modern medicine which can with every justification ground its excellence above that of the ancients’.⁸⁶

An influential early eighteenth century German assessment of Bontekoe’s medical works by the erudite polyhistor and senior Lutheran ecclesiastic at Hildesheim, Jacob Friedrich Reimmann (1668-1743), who included a history of medicine (commended in

⁷⁹ C. Bontekoe, *Abhandlung von des Menschen Leben, Gesundheit, Kranckheit und Tode* (Budissin, Leipzig, 1719) Editor’s preface A4-5.

⁸⁰ Ibid. See also Stolle, *Anleitung*, 253; Han van Ruler, ‘Cornelis Bontekoe (c. 1644-85)’, in Wiep van Bunge et al, *Dictionary [...] Dutch Philosophers* I, 128-32, here 129.

⁸¹ [Periodical] *Novellen aus der gelehrten und curiösen Welt darinnen die Quintessense mannigfaltiger Gelehrsamkeit [...] enthalten*, 6 vols. (Frankfurt, Gotha, Leipzig, 1692-97) here January 1692, 100.

⁸² C. Bontekoe, *Nouveaux Éléments de Médecine, ou réflexions physiques sur les divers états de l’homme* (Paris, 1698) fo. 111.

⁸³ See the online catalogue of the Staatsbibliothek Berlin Preussischer Kulturbesitz, entry: Bontekoe, Cornelis.

⁸⁴ Christoph Hendreich, *Pandectae Brandenburgicae* (Berlin, 1699) 653.

⁸⁵ A. G. Luīscius (ed.), *Het Algemeen Historisch, Geographisch en Genealogisch Woordenboek*, 8 vols. (The Hague, Delft, 1724-30) I, 38.

⁸⁶ Bontekoe, *Nouveaux Éléments* (1698) Translator’s preface, fo. 2.

Zedler's *Universal-Lexicon*) as part of his general *historia literaria* of the Germans,⁸⁷ characterizes Bontekoe's style as 'clear, intelligent, distinct, amusing', his order of presentation 'natural, lucid, agreeable', and his points 'essential, useful, thorough', even if 'not infrequently paradoxical, for he has very much his own notions in mind'.⁸⁸ Reimmann evidently approved of Bontekoe's manner of writing for the most part, commenting, 'all this he presents in such a lively, entertaining and pleasant way and manner that one can hardly get enough of it'. In his view, Bontekoe's works would have been 'held twice as high among scholars' but for his self-love, self-praise and contempt for others, his 'Pharisaism' having proved as detrimental for his teachings as 'Sadducaism' for his life.⁸⁹ He grants that Bontekoe's reputation had been damaged by reports, spread by opponents about his allegedly 'dissolute' lifestyle, drunkenness having supposedly led to his fall and early death. Here Reimmann remains rather neutral. 'On the contrary', he maintains, 'it is certain that although an autopsy showed his stomach to be as thin as the leaf of a poppy, everything else in his body was healthy and could have survived much longer'. If Bontekoe's foes attributed his thin stomach to excessive tea-drinking, Reimmann says, his friends saw in his healthy constitution a confirmation of his doctrines.⁹⁰

Reimmann declares Bontekoe and Stahl to be 'companions in the *Syllabo* of German *Medicorum Eclectiorum*'⁹¹ and dismisses the idea that Bontekoe was a '*purus putus Cartesianus*'. Anyone seeing him as a 'sworn Cartesian', he says, had never read his works with proper attention, since his basic doctrines and disagreement with several of Descartes' propositions show him rather to be an Eclectic.⁹² This significant passage reflects the tendency in German Lutheran culture at that time to rate particularly highly an eclectic approach to philosophy, science and medicine.⁹³ Hence, in the German context, this would have been a way of raising his prestige as a medical writer and also narrowing the gap between him and other esteemed medical authorities of the period, such as Stahl, whose medical principles were very different. While Bontekoe does not describe himself as an Eclectic and cannot accurately be seen as such, it is true that in the *Korte Verhandeling* and other late writings he no longer wishes to be described as a

⁸⁷ Zedler, *Universal-Lexicon* II (1732) 1746.

⁸⁸ Reimmann, *Versuch* (1713) part VI, 636.

⁸⁹ *Ibid.*, 639.

⁹⁰ *Ibid.*, 640.

⁹¹ *Ibid.*

⁹² *Ibid.*, 636.

⁹³ See below, ch. III, 97-8, 111.

Cartesian and places some emphasis on his disagreements with Descartes' propositions, all the more so, he asserts, 'in that I can prove that in many things des Cartes [Descartes] was all too *modest*, being a nobleman'. Although he agrees that his method parallels that of Descartes in important respects, nevertheless, he declares, 'he is not a law, nor even a model, that I am obliged to follow. [...] Therefore let no one call me a Cartesian, though I willingly affirm and, if necessary, also defend the truths I find in him, after I have examined them'.⁹⁴

In one of his works, expressing a wider radical point of view, in which he seeks to provide 'new proof of the necessity and greatest usefulness of a universal doubt linked to reason against all the irrational and disparagers of reason', Bontekoe fiercely criticizes uncritical acceptance of conventional notions, including ideas about aristocracy and the social hierarchy, as a heap of error and obscurity. Because people are conditioned from childhood to absorb 'customs, prejudice, inflexibility, opinions etc.', only very few examine their views in a critical spirit, he asserts, this being 'the reason why men and human affairs are in such a dreadful confusion'. As a result, people throughout society are in an excessive state of dependence on the strongest and most dominant.⁹⁵ Unusually for his time, Bontekoe offers not only a radical critique of the hierarchical divisions in society but also an explanation of the ascendancy of false ideas and the cause of the strife and divisions among 'philosophers, theologians, lawyers, doctors, moralists, sophists, quacks, statesmen, preachers of immorality, ear-trumpeters, slanderers etc.' as rivalry for dominance and control.⁹⁶ He claims that since all men live in a state of confused ideas, nothing can be healthier and more useful for a person than to sit down and critically examine one's received ideas and situation in life.⁹⁷ Bontekoe's wider view of why confusion reigns, and most ideas are wrong, has an important relevance to his conception of medical reform. It provides him with an explanation why so many doctors in medicine 'blind themselves' to the truth, as he sees it, just as 'Papists fail to see that in religion Luther and Calvin have understood matters better than the great mass of papal theologians, bishops and popes of earlier centuries', not believing 'that a single Harvey should have discovered the circulation of the blood, unknown to all the ancients, and that

⁹⁴ Bontekoe, *Korte Verhandeling* (1684) D5.

⁹⁵ C. Bontekoe, *Een Nieuw Bewys van d' Onvermijdelike noodzakelijkheid en grootste nuttigheid van een Algemene Twyfelning nevens de Reden tegens alle redelose en reden beknibbelaars* (Amsterdam, 1685) 7-9.

⁹⁶ *Ibid.*, 10.

⁹⁷ *Ibid.*, 11, 16, 20.

Paracelsus (here giving him his due), with a few chemists, often people of little education [...], should have understood how to cure illnesses better than Hippocrates, Galen etc.’.⁹⁸

While ridiculed and denigrated by late eighteenth and nineteenth century medical historians such as Knebel,⁹⁹ Metzger,¹⁰⁰ Sprengel,¹⁰¹ Banga,¹⁰² others, like Haeser, took a more positive view of Bontekoe’s medical reformism and considered him to have been judged too harshly.¹⁰³ Until the 1980s, Bontekoe has generally been treated as entirely marginal, aside from the issue of tea. Since then, however, beginning with Johanna Geyer-Kordesch, a number of scholars have begun to reassess his role.¹⁰⁴ Arguably it is still the case that his historical importance is insufficiently appreciated.

⁹⁸ Bontekoe, *Een Nieuw Bewys* (1685) 25-6. Paracelsus was the first to dismiss Galenic medicine with its construction of ‘abstract systems and discussion of recondite issues of causation’ as a ‘redundant scholastic exercise’. See Charles Webster, ‘Paracelsus: medicine as popular protest’, in Ole Peter Grell and Andrew Cunningham (eds.) *Medicine and the Reformation* (1993) 57-77, here 68.

⁹⁹ See below, ch. I, 29-30; ch. V, 185.

¹⁰⁰ See below, ch. VI, 214.

¹⁰¹ See below, ch. V, 187-8, and Sprengel’s outrageously belittling article in Ersch and Gruber (eds.), *Allgemeine Encyclopaedie*, Part I, XI, 413.

¹⁰² Jelle Banga, *Geschiedenis van de geneeskunde en van hare beoefenaren in Nederland* (1975 [1868]) 627-35.

¹⁰³ Haeser, *Lehrbuch* II, 376-7.

¹⁰⁴ Johanna Geyer-Kordesch, ‘Deutschsprachige Bücher aus Holland: Medizinische Kontroversen und ihr Publikum in Deutschland 1680-1730’, in Van Lieburg and Toellner, *Deutsch-Niederländische Beziehungen*, 93-108; Johanna Geyer-Kordesch, ‘Fevers and other Fundamentals: Dutch and German Medical Explanations, 1680-1730’, in William Bynum and Vivian Nutton, *Theories of Fevers from Antiquity to the Enlightenment* (1981 [*Medical History*, Suppl. 1]) 99-120; Annette Munt, ‘The impact of Dutch medical authors in German translation’, in Hellinga et al, *Bookshop of the World* (2001) 219-31; Christoph Schweikardt, ‘More than just a Propagandist for Tea: Religious Argument and Advice on a Healthy Life in the Work of the Dutch Physician Cornelis Bontekoe (1647-1685)’, in *Medical History* XLVII, 3 (2003) 357-68.

ii) Heidentryk Overkamp

Heydentry[c]k Overkamp (Coevorden 1651-Amsterdam 1694) first met Bontekoe at Leiden University, where Overkamp also studied medicine (April 1675 - July 1677) under Theodor Craanen, whom he admired as ‘one of the greatest minds in the whole of Europe’ and ‘first official representative’ of the ‘reformed Cartesian medicine’.¹⁰⁵ Overkamp appears to have been poor, for on 2 July 1677 the Senate resolved, in view of the excellent report of the Medical Faculty on him, that he could graduate without costs.¹⁰⁶ On 10 July 1677, he gained his doctorate with a *Disputatio medico-chirurgica* [...] *de gangraena et sphacelo*, dedicated to the professors Drélincourt, Schacht and Craanen.¹⁰⁷ Lindeboom states, ‘For no obvious reason the inscription in the *Liber promotionum* has been scratched out with a note in the margin that his diploma was burnt’.¹⁰⁸ Thijssen-Schoute, and other scholars since, suggest that it was Overkamp’s explicit rejection of miracles, and other propositions reminiscent of Spinoza, to which, in 1680, the Senate objected.¹⁰⁹ Overkamp did indeed have Spinozistic leanings; he was known to meet with a group of ‘atheists’ in a particular wine house¹¹⁰ and was a regular member of the Spinozistic circle in Amsterdam during the 1680s and 1690s.¹¹¹ The Zwolle physician Hendrik Smeeks, an ‘enlightened freethinker’ and author of the novel *Beschryvinge van het magtig koningryk Krinke Kesmes* (1708), claimed, when accused of Spinozism, ‘not to have read, or known, Spinoza, also being unaware of what [he] taught, but to have read Bontekoe and Overkamp against De Cartes’.¹¹²

Like Bontekoe, Overkamp was a committed but critical Cartesian. They did not accept the pineal gland as the seat of the soul; their (Spinozistic) conviction that ‘movement is inherent in matter and extension’ stands in direct opposition to Descartes’ fundamental theory of motion which defines movement external to matter and therefore as an accident or coincidental.¹¹³ They equally reject Descartes’ view of the solidity of

¹⁰⁵ Overkamp, *Reden* (1685) 16-17.

¹⁰⁶ Molhuysen, *Bronnen* (1647-1682) III, 331.

¹⁰⁷ Thijssen-Schoute, *Nederlands Cartesianisme*, 286.

¹⁰⁸ ‘Huius diploma ex auctoritate Senatus iuridici combustum’, quoted in G. A. Lindeboom, *Dutch Medical Biography, A Biographical Dictionary of Dutch Physicians and Surgeons 1475-1975* (1984) 1487.

¹⁰⁹ Thijssen-Schoute, *Nederlands Cartesianisme*, 286-7; Otterspeer, *Groupsportret* II, 97.

¹¹⁰ Inger Barabara Leemans, *Het Woord is aan de Onderkant, Radicale ideeën in Nederlandse pornografische romans 1670-1700* (2002) 279.

¹¹¹ Rienk Vermij, ‘Le Spinozisme en Hollande: Le cercle de Tschirnhaus’, in *Cahiers Spinoza* VI (1991) 145-68.

¹¹² Leemans, *Het Woord*, 279.

¹¹³ Overkamp, *Reden* (1685) 14; Thijssen-Schoute, *Nederlands Cartesianisme*, 309-10.

the body as a state of rest as untenable. Their observations, Thijssen-Schoute concludes, appear to have been derived from the French philosopher Nicolas Malebranche (1638-1715), whose *Recherche de la vérité* were anonymously published in Amsterdam and Rotterdam (1681), as well as from Spinoza and the German philosopher Ehrenfried Walther von Tschirnhaus, whom Overkamp knew personally.¹¹⁴

After ten years of medical practice in Harlingen (Friesland), Overkamp moved to Amsterdam in 1687, where, on 10 July, he is registered in the list of names of Amsterdam physicians.¹¹⁵ His surgical skills and diligence also earned him a membership in the surgeons' guild, as well as some disapproval, labelling him a 'vagrant, quack and ignoramus',¹¹⁶ an example of the prejudice directed at physicians who also practised as surgeons. Within a short time, however, Overkamp's rather negative reputation recovered with the success of his 'blissful cures', though not altogether, for his 'all too great astuteness' and friendly association with Bontekoe led to his being defamed as an 'atheist'.¹¹⁷ In any case, Overkamp proclaimed a strictly mathematical and mechanistic conception of natural science, including medicine, stating, 'I accept in natural philosophy no principles which are not also accepted in mathematics, in that everything I deduce therefrom I can prove by demonstration and because these principles are enough for explaining all the phenomena of nature.'¹¹⁸ Nor did he think that these principles were only relevant to those interested in theoretical science and philosophy, for he also states in an 'address to the surgeons' that Cartesianism transforms all science.¹¹⁹

Overkamp's first publication, the *Nieuwe beginselen tot de genees- en heilkunst, steunende op de gronden der fermentatie en dese op die van R. Descartes* (Amsterdam, 1681),¹²⁰ was praised by Bontekoe in the fourth (1682) edition of his treatise on fevers.¹²¹ Delighted to have found an ally who shared his reforming ideas, Bontekoe also thanked Overkamp personally, in a letter dated 13 July 1682, for being 'the first to come to my aid in bringing to light the new discoveries that are to serve the new construction of medicine and surgery'. Bontekoe explains his 'sharp pen and hard words' in critique of

¹¹⁴ Thijssen-Schoute, *Nederlands Cartesianisme*, 312-13.

¹¹⁵ *Ibid.*, 317.

¹¹⁶ Reimmann, *Versuch* (1713) part VI, 818.

¹¹⁷ *Ibid.*

¹¹⁸ H. Overkamp, *Alle de Medicinale, Chirurgicale en Philosophische Werken*, 2 vols. (Amsterdam, 1694) I, 175.

¹¹⁹ *Ibid.* II, Preface.

¹²⁰ Subsequent editions: Amsterdam, 1685; 1686; German transl.: H. Overkamp, *Auff des Renati des Chartes Grund neuerbaute Chirurgie*, transl.: Joh. Schreyer (Leipzig, 1688).

the ‘wrong and injurious theories and medical practises’ of ancient and newer medicine as a necessary measure, for ‘whispers would not wake anyone from the deep sleep of ignorance and lethargy’. Overkamp published Bontekoe’s letter and his own enthusiastic *Antwoord* in his second work, the *Nieuw Gebouw Der Chirurgie Of Heelkonst* (1682), assuring Bontekoe that his writings were ‘by far not sharp enough yet’, for ‘the severity of the disease dictates the medicine’.¹²² To Bontekoe, Overkamp pledged ‘steadfast and unfeigned friendship’, based on a ‘similarity in scientific thought’ and regarded it ‘a great honour and glory’ to be counted, together with Bontekoe, among the ‘atheists’, for if it was the sign of an atheist that he and Bontekoe strove to bring about an improved medicine and surgery, he would gladly suffer the consequences.¹²³ That his vision was appreciated by some is shown in a laudatory poem by the physician Emanuel van Yperen in Overkamp’s *Nieuw Gebouw*. Van Yperen applauds the discarding of the ancients for Descartes and, in praise of Overkamp, exclaims, ‘He makes inadequacy collapse and erects for us a bright light’. [hy doet ‘t gebreck ter neder ploffen, Steekt voor ons op, een ligte Lamp].

In the preface to his *Nieuw Gebouw*, optimistically addressing ‘all the surgeons in the whole of Europe’, Overkamp condemns the Galenic method as utterly harmful and cursed, with which ‘millions of people have fared badly and been brought into the grave’. Teaching the art of healing ‘differently, after a rational method’, Overkamp confidently asserts, will ‘keep them on the path’, so they will no longer fall for the old conception of ‘hot’ or ‘cold’, nor need to speak of ‘a hot liver, the gall rising, of hidden as well as obvious qualities, or temperaments’. Advising them to ‘seek instruction that is alive’, he promises, ‘I will teach you more than if you had heard a professor speak for ten years about the aphorisms of Hippocrates.’¹²⁴ Overkamp feels assured that ‘since the art of healing has now emerged from darkness, and a truer philosophy has been discovered and confirmed with thousands of experiments’, many, better qualified than he himself, will work towards creating a greater and better ‘architecture’ of medicine. He presents Bontekoe as a role model who successfully combined his philosophical principles with

¹²¹ C. Bontekoe, *Reden over de Kortzen, door welke aangewesen word: dat de gemeine theorie en praktijk valsch, schadelijk en moordachtig is*, 4th edn. (The Hague, 1682).

¹²² Overkamp, *Nieuw Gebouw* (1682) 417-18; 432.

¹²³ Ibid., 431.

¹²⁴ Ibid., ‘Voor-Reden Aen alle Chyrurgyns van geheel Europa’; In the German edition, *Neues Gebäude der Chirurgie gezimmert nach den neuen Principien der Medicin* (Leipzig, 1689; 2nd edn.: *Neu erfundene Heyl-Kunst oder Chirurgia*, Leipzig, 1692) here 1689 edn., the preface is addressed to the ‘Lehrlinge der Chirurgie’ [surgeons’ apprentices] B5 fo.

medical practice. Considered ‘a fool by the Galenic fable tellers’, he was now ‘greatly respected, to the resentment of his enemies’.¹²⁵

Overkamp’s theories on human physiology, based on the Sylvian chemical processes of effervescence and fermentation and on the composition and fluidity of the body fluids, are, like Bontekoe’s, highly speculative. He wished to simplify medical explanations and remedies, reduce the number of illnesses which, in their large number, caused ‘no small confusion in the minds of apprentices’, and sought to demonstrate that all swellings originated from an obstruction and stasis of the body fluids. Their healing was a matter of dissolving the occluding substances, best done with volatile salts [extracted from animal bones and horns] and aromatic and subtle oils.¹²⁶ Even fevers which accelerate the blood flow are, in reality, due to a diminished circulation in some part of the body, thus inducing the rest of the body fluids to circulate more quickly in order to supply the body with nutrients.¹²⁷ The dispersing quality of particles in the air, referred to as ‘hemelsvuur’, (in the German version translated as ‘subtiles Himmelsfeuer’)¹²⁸ – a term for ‘aerial nitre’, an integral component of air essential to life, publicized by the English Cartesian physician and iatrochemist John Mayow (1643-79) in 1668,¹²⁹ also plays an important part in Overkamp’s (and Blankaart’s) physiology for the effervescence of the body fluids and explanation of digestion.¹³⁰ Mixed with the sulphur in the blood, ‘aerial nitre’ was thought to cause ‘fermentation and heating’.¹³¹ As the body is changeable and, ‘like the soul, unable to regenerate itself unaided’, the application of medicine, in Overkamp’s view, maintains the desired union between body and soul.¹³²

His collected works were posthumously published in Dutch (Amsterdam, 1694; 1720) and, under the title *Medicinische und chirurgische Schriften*, in German translation (Leipzig, 1690; 1704; 1705; Augsburg, 1710). In the German medical literature of his day Overkamp is frequently mentioned, and he is, with Bontekoe, Blankaart, and Van Horne, counted among the most outstanding ‘German’ surgeons and best-known European

¹²⁵ Overkamp, *Neues Gebäude* (1689) Preface [unpaginated].

¹²⁶ Ibid.

¹²⁷ Overkamp, *Nieuw Gebouw* (1682) 105.

¹²⁸ Overkamp, *Neues Gebäude* (1689) 14, 232.

¹²⁹ Mayow’s *Tractatus* [...] *de respiratione* was reprinted in Leiden in 1671 and would have had great significance for research into respiration at Leiden University. See Thijssen-Schoute, *Nederlands Cartesianisme*, 338.

¹³⁰ H. Overkamp, *Oeconomia animalis, oder Gruendlicher Unterricht von der Geburt, Nahrung und Wachsthum des Menschen nach den Lehr-Sätzen Cartesii* (Leipzig, 1690) 86, 99-100, 167.

¹³¹ For a succinct account of Mayow’s theory see Porter, *Greatest Benefit*, 221-2.

¹³² Overkamp, *Oeconomia animalis* (1690) Dedication.

authors on surgery.¹³³ At a time when wound treatment and surgery in Germany, to a greater extent than in Italy, France, or Holland, was still almost exclusively in the hands of barbers and itinerant ‘specialists’, the first positive changes came through books on surgery in the vernacular.¹³⁴ Matthaeus Gottfried Purmann (1648-1721), city physician of Breslau, and one of the most prominent surgeons in Germany,¹³⁵ praised the ‘excellent new *Chirurgischen Gebäuden* of Bontekoe and Overkamp’, and the ‘learned and very industrious Doctor Blanckardt’ for describing, in his new ‘*Wund-Artzneyischen Kunst-Kammer*’, the great variety of surgical instruments so ‘succinctly and well as could not be bettered’.¹³⁶

iii) Steven Blankaart

The most prolific and versatile writer in this group of Dutch Cartesian medical authors was Steven Blankaart (or Stephanus Blancard/Blanckaert; 1650-1704). Born in Middelburg, where his prominent father, Nicolaas Blankaart, was professor of history and archaeology at the Middelburg Atheneum Illustre from 1650-66, Steven was educated at the Latin school. After an apothecary apprenticeship in Amsterdam (1668-71),¹³⁷ he studied medicine and philosophy at Franeker University (31 July 1671-18 December 1674), where his father, after practising as a physician at Heerenveen and Leeuwarden between 1666-69, had become professor of Greek language and archaeology.¹³⁸ After graduating as a medical doctor, the young Blankaart built up a flourishing practice in Amsterdam and became famous as a medical author.¹³⁹

Blankaart’s most important work is his comprehensive terminological Greek-Latin medical dictionary.¹⁴⁰ He was also the first to issue a medical periodical in Holland.¹⁴¹ The *Collectanea medico-physica or Hollands Jaar-Register der Genees-en Natuur-*

¹³³ Zedler, *Universal-Lexicon* LIX (1749) 1450.

¹³⁴ Heinrich Haeser, *Übersicht der Geschichte der Chirurgie und des chirurgischen Standes* (1879) 35-6; Lindeboom, *Geschiedenis*, 114.

¹³⁵ *HBL* 2nd IV, 689-90; Haeser, *Übersicht*, 36.

¹³⁶ Matthaeus Purmann, *Chirurgia Curiosa, Darinnen Ein jedweder Chirurgus nicht allein aufs gründlichste sehen und finden kann, was in die gantze Wund-Artzeney vor künstliche Operationes, richtige Cur-Vortheile, bewährte Artzney-Mittel, leichte und geschwinde Hand-Griffe gehören [...]* (Frankfurt, Leipzig, 1699) 3-4.

¹³⁷ *HBL* 1st I, 481.

¹³⁸ Lindeboom, *Dutch Medical Biography*, 151-2.

¹³⁹ *Ibid.*, 152-54; *NNBW* IV, 156-7.

¹⁴⁰ See below, ch. III, 124-6.

kundige Aanmerkingen (Amsterdam, 1680-8; German transl.: Leipzig, 1690), originally launched with a print run of 400,¹⁴² discussed extraordinary cases, inland and abroad, and remained in publication for eight years (1680-88). In his preface to the 1682 edition, addressed to the authors of the scholarly journals *Ephemerides* in Germany,¹⁴³ the *Journal de S[ç]avans* in France and the *Acta Philosophica* in England, Blankaart stresses the necessity to explore the sciences in depth and set them on firmer foundations with exact observations and many experiments. Blankaart was equally well-known for his work on venereal diseases in *Venus belegerd en ontzet*,¹⁴⁴ a medical bestseller, translated into German,¹⁴⁵ French and English, as well as for his popular dietary guide, *De Borgerlyke Tafel* (1683),¹⁴⁶ his treatises on medicine, surgery, childcare, chemistry, anatomical dissection, the embalming of bodies, medicinal herbs, the effects of medicines on the human body, on caterpillars and worms, and other topics. He edited various works of other physicians, including the collected works *Alle de philosophische, medicinale en chymische werken* (1689) by his friend Bontekoe, and the second (posthumous) extended edition of the *Redelijke heel-konst-oeffening* (1699) by Joannes Muys.

Like Bontekoe and Overkamp, Blankaart was a declared but also critical Cartesian and convinced that his conception of the ‘new’ medicine and surgery, based on Cartesian principles, offered scientifically sound, path-breaking new insights, placing medicine on a previously unattained pinnacle of achievement. Some publishers enthusiastically agreed. The title page of the third (1689) German edition of his *Nieuw-lichtende Praktyk der Medicynen* (1678)¹⁴⁷ declares it a ‘work of great interest and utility, the like of which, as long as the world has existed, has never come to light before’.¹⁴⁸ Published in

¹⁴¹ M. J. van Lieburg, ‘Over de Collectanea van Stephen Blankaart’, in a 1997 facsimile of Blankaart’s 1680 edition of the *Collectanea Medico-Physica, oft Hollands Jaar-Register* (Franeker) unpaginated.

¹⁴² Blankaart, *Collectanea Medico-Physica* (1997) Preface of 28 October 1680.

¹⁴³ See *Ephemerides Naturae Curiosae* below, ch. III, 109.

¹⁴⁴ S. Blankaart, *Venus [...] Oft verhandelinge van de pokken, en des selfs toevallen, met een grondige en zekere genesinge, steunende meest op de gronden van Cartesius* (Amsterdam, 1684; 1688; 1696; 4th print in *Nieuwe konstkamer der chirurgie*, Amsterdam, 1702; 5th print Amsterdam, 1729).

¹⁴⁵ S. Blankaart (ed.), *Die belägte und entsetzte Venus* (Leipzig, 1689; 1690; 1693; 1698; 1699; 1700; Augustae Vindel [Augsburg], 1710; 1712; 1742); According to Ersch and Gruber, *Allgemeine Encyclopaedie*, Part 1, X, 308, this treatise became ‘very well known’, and Blankaart was praised for having done ‘much good’ by Johann Müntzer (surgeon in Brega) in a laudatory poem about Matthaeus Purmann, surgeon and city physician of Breslau, in the latter’s work on venereal disease, *Ausführlicher Unterricht und Anweisung wie die Salivations-Cur Nach allen Umständen und Vortheilen aufs beste und sicherste vorzunehmen [...]* (Liegnitz, 1692).

¹⁴⁶ See below, ch. V, 182-3, ch. VI, 199, 201, 204.

¹⁴⁷ Subsequent editions: Amsterdam, 1680; 1685; 1690; 1696; Rotterdam, 1726; 1735.

¹⁴⁸ [First German edition: S. Blankaart, *Neu-Leuchtende Praxis der Medicin, worinn erwiesen wird, daß alle Kranckheiten eine Verdickung des Geblüts und der Säffte seyn, und bloß von Säure und Schleim entstehen, nebst einer Abhandlung der heut-tägigen Chymia, in welcher über derselben Bereitung genau*

Hanover, Frankfurt, Leipzig and, subsequently, Wolfenbüttel, this work was so popular, notes the publisher of the 1690 edition, that the ‘rapid sale of a large number of copies’ had required a reprint.¹⁴⁹ Equally popular in Germany were Blankaart’s *Nieuwe Konst-kamer der Chirurgie of Heelkonst* (1680),¹⁵⁰ and his *Kartesiaanse Academie* (1683),¹⁵¹ described as a work ‘full of Cartesian wisdom seen through Bontekoean spectacles’,¹⁵² in which he dismisses the Galenic doctrine of the four humours – Sanguis, Bilis, Melancholia and Pituita - and the swellings supposedly originating from them and, instead, assesses remedies not according to their ‘hot, cold, dry or wet’ properties but whether ‘sour, salty, or sharp’ attributes in diseases need to be treated with ‘opposing correctives’.¹⁵³ Blankaart’s *Verhandelinge van het Podagra En Vliegende Jicht* (1684) was published in seven German editions, in which he claims that milk, tea and coffee, rich in alkali, heal the gout, originating from sour particles in the body.¹⁵⁴

Thijssen-Schoute suggests that in some respects Blankaart can be regarded as a predecessor, in others as a follower of Bontekoe.¹⁵⁵ He is said to have made frequent use of Bontekoe’s views on nourishment and pathology, though unlike Bontekoe (and Leeuwenhoek) but like Overkamp, he believed in the fermentation of the blood.¹⁵⁶ Blankaart, while full of admiration for Bontekoe,¹⁵⁷ does not hesitate, however, to declare himself the first who had ‘completed the rebuilding of medicine’ by following in the

*raisoniret wird [...] transl.: H. D. (Hannover, 1687)] Subsequent editions are titled: *Neuscheinende Praxis der Medicinæ, worinnen angewiesen wird, daß alle Kranckheiten eine Verdickung des Bluts und der Säfte sind, und bloß von Sauer und Schleim entstehen*, transl. after the 3rd Dutch edn. by G. H. W. Med. D. (Hannover, Frankfurt, Leipzig, 1688; 1689; (and Wolfenbüttel) 1690; Hannover, 1697; 1699; 1708; 1718; Hannover, Wolfenbüttel, 1700; 1703; 1704) here 1689 edn., Publisher’s note.*

¹⁴⁹ Blankaart, *Neuscheinende Praxis* (1690) Publisher’s note.

¹⁵⁰ Subsequent Dutch editions: Amsterdam, 1685; 1702; 1716; 1729; German transl.: S. Blankaart, *Neue Kunst-Kammer Der Chirurgie oder Heil-Kunst, worinnen die auff gewissen und wahrhafftigen Gründen gebauete Chirurgie aufgestellt [...] (Hannover, 1687; Hannover, Hildesheim, 1688; 2nd edn. 1690; 1692; 4th edn.: Hannover, Wolfenbüttel, 1699; 1700; Hannover, Frankfurt, Leipzig, 1707; Hannover, 1708).*

¹⁵¹ S. Blankaart, *De Kartesiaanse Academie, Ofte Institutie der Medicyne, Behelsende de gansche Medicyne, bestaande in de leere der gesondheid en desselfs bewaringe, als ook der ongesondheid en haar herstellinge. Alles op de waaragtige gronden, volgens de meining van den Heer Cartesius gebouwt* (Amsterdam, 1683; 1691; 1702); German transl.: S. Blankaart, *Cartesianische Academie, oder Grund-Lehre der Arzney-Kunst, nach den Grund-Lehren Cartesii* (Leipzig, 1690; 1693; 1699; Augsburg, 1710).

¹⁵² Thijssen-Schoute, *Nederlands Cartesianisme*, 328.

¹⁵³ Blankaart, *Neue Kunst-Kammer* (1690) 3-4.

¹⁵⁴ S. Blankaart, *Accurate Abhandlung von dem Podagra und der Lauffenden Gicht [...] (Leipzig, 1690; 1691; 1692; Augsburg, 1700; Frankfurt und Leipzig, 1705; Augsburg, 1710; new edn.: *Eigentliche Abhandlung von dem Podagra [...] (Leipzig: 1733) here 1690 edn.**

¹⁵⁵ Thijssen-Schoute, *Nederlands Cartesianisme*, 319, 322.

¹⁵⁶ Han van Ruler, ‘Steven Blankaart (1650-1704)’, in Van Bunge et al, *Dictionary [...] Dutch Philosophers* I, 106-10, here 107; H. A. M. Snelders, ‘Antoni van Leeuwenhoek’s mechanistic view of the world’, in L.C. Palm and H.A.M. Snelders (eds.), *Antoni van Leeuwenhoek 1632-1723* (1982) 57-78, here 70-71.

¹⁵⁷ See, for example, Blankaart, *Neue Kunst-Kammer* (1690) 4.

footprints of Descartes ‘on the path of reason’,¹⁵⁸ and ‘having brought medicine thus far based on these principles’.¹⁵⁹ Like Bontekoe and Overkamp, Blankaart dismisses Descartes’ theory about the pineal gland and questions his presentation of the body-soul dichotomy, suggesting the possibility that the soul ‘resides not only in the brain but also in all other parts, and, like the body fluids, is united with the body’. As another possible seat for the soul he names the *medulla oblongata*.¹⁶⁰ Blankaart grossly erred when boasting in the preface of his widely read *De nieuw hervormde anatomia* (1678)¹⁶¹ that he had discovered valves in the muscle fibres with which Harvey’s discovery of the circulation of the blood was supposedly complete.¹⁶² As an adherent of the Sylvian iatrochemical school, Blankaart attached great importance to fermentation between acids and alkalies. His chemiatic theories are dominated by Descartes’ mechanistic, deductive method and are methodologically unsound. He regarded even metals, including gold, as consisting of acids and alkalis.¹⁶³

Although Blankaart made no outstanding contributions to chemistry, he participated intensely in the scientific debates of his time. In 1683, he annotated and published the works of the iatrochemists John Mayow¹⁶⁴ and the French physician and ‘popular medico-chemical writer’ Nicholas Lémery (1645-1715), one of the founders of the new science of chemistry, whose *Cours de la Chémie* (1675) was reprinted some twenty times in France and translated into various European languages.¹⁶⁵ Blankaart’s own textbook on chemistry, based on Descartes’ view of nature and the theory of acids and alkalis, the

¹⁵⁸ Blankaart, *Kartesianaanse Academie* (1683) Preface.

¹⁵⁹ S. Blankaart, *Nauwkeurige verhandelinge van de scheurbuik en des selfs toevallen. Als ook een naakt vertoog wegens de fermentatie oft innerlijke beweging der lighamen, meest op de gronden van Des Cartes gebouwt* (Amsterdam, 1684; 1696) here 1684 edn., 320.

¹⁶⁰ Blankaart, *Cartesianische Academie* (1690) 205-6; See also Blankaart, *Von Würckungen* (1690) 294, 296.

¹⁶¹ Subsequent editions: Amsterdam, 1679; 1686; Leiden, 1686; 1687; 1695; 1696; 1697; 1756 [A. J. J. Vandevelde, ‘Bijdrage tot de studie der werken van Stephanus Blankaart’, in *Verslagen en Mededeelingen Der Koninglijke Vlaamsche Academie voor Taal en Letterkunde* (1924) 453-94, here 459, also lists: Magdeburg [Halle], 1718; Leipzig, 1777 and 1832, as well as a French (Amsterdam, 1688) and English translation (London, 1690)]; Latin transl.: *Anatomia reformata* (Leiden, 1687; 1688; 1695; Jena, 1697); German transl.: S. Blankaart, *Reformirte Anatomie Oder Zerlegung des Menschlichen Leibes* (Leipzig, 1691; 1692); new improved edn.: *Reformirte teutsche Anatomie* (Leipzig, 1705).

¹⁶² Thijssen-Schoute, *Nederlands Cartesianisme*, 321; Ruestow, *The Microscope*, 101.

¹⁶³ Ernst Bloch, ‘Die chemischen Theorien bei Descartes und den Cartesianern’, in *Isis* (1913) 591-635; See also Thijssen-Schoute, *Nederlands Cartesianisme*, 257-9.

¹⁶⁴ J. Mayow, *Alle de medicinale en natuurkundige werken* (Amsterdam, 1683; 1684); See Thijssen-Schoute, *Nederlands Cartesianisme*, 332-7.

¹⁶⁵ N. Lémery, *Het philosophische laboratorium of der chymisten stok-huys* (Amsterdam, 1683); Thijssen-Schoute, *Nederlands Cartesianisme*, 330-31; W. Stoeder, *Geschiedenis der Pharmacie in Nederland* (1974 [1891]) 170.

Nieuwe hedendaagsche stof-scheiding (Amsterdam, 1678; 1680; 1685; 1696), also titled *De Hedendaagsche Chymie* (1703), had five German editions.¹⁶⁶ But alchemy had not yet lost its fascination, inducing Blankaart to (anonymously) edit a Dutch compilation from the work of the English physician and chemist Sir Kenelm Digby (1603-1665),¹⁶⁷ at one time a close associate of Descartes,¹⁶⁸ whose obscure alchemistic theories about the ‘philosopher’s stone’, the yielding of gold and silver from tin, and, most intriguing, how to heal gunshot wounds with ‘sympathetic powder’ rubbed onto the weapon instead of the wound, captivated readers in the Netherlands and no less in Germany.¹⁶⁹ As might be expected, in the varieties of chemical discourse of this period ‘obscure, volatile, and ancient ideas coexisted with clear and precise concepts’, and whilst aiming at a differentiation between chemistry and alchemy, traditional and Paracelsian alchemical concerns remained deeply entrenched in early eighteenth century scientific endeavour, as the activities of Newton, Boerhaave, and Stahl (who regarded ‘alchemical theory and research as the source of new chemical knowledge’) clearly demonstrate.¹⁷⁰

Blankaart’s works are based partly on his own research and observations but are largely compilations of existing medical knowledge,¹⁷¹ disparaged for having ‘no scientific value’, for Blankaart’s ‘short-lived allegiances to one theory or another’, and for directing his efforts ‘first and foremost to making a profit from his knowledge’.¹⁷² Contemporary physicians like the pugnacious and fiercely anti-mechanist Stahlian

¹⁶⁶ S. Blankaart, *Die neue heutiges Tages gebräuchliche Scheide-Kunst oder Chimia, nach den Gründen des fürtrefflichen Cartesii und des Alkali und Acidi eingerichtet* (Hannover, Wolfenbüttel, 1689; Hannover, 1697; 1708; Augsburg, 1700; Wolfenbüttel, 1718).

¹⁶⁷ S. Blankaart [Pseud.: N.N.], *Theatrum Chemicum, Ofte Geopende Deure der Chymische Verborgentheden. Ontsloten Van de vermaartste Autheuren, die in de Chymische Stoffe gelaboreert en geschreven hebben [...]* Met een vervolg over de Chymische Verborgentheden aangaande de verandering en verbetering der Metalen en Gesteenten. Door den Ridder K. Digby (Amsterdam, 1693).

¹⁶⁸ Thijssen-Schoute, *Nederlands Cartesianisme*, 189-96.

¹⁶⁹ S. Blankaart, *D. Stephan Blancards Theatrum Chemicum: Oder Eröffneter Schau-Platz und Thür zu den Heimlichkeiten In der Scheide-Kunst, Nebenst einer Vermehrung, Wie die geringen Metalle und gemeinen Steine zu verbessern sind durch Kenelm Digby* (Leipzig, 1693; 1694; 1700; Augsburg, 1710) here 1700 edn., 153-4; Digby’s ‘sympathetic’ powder, made from ‘English vitriol’, is commended for stopping bleedings by direct application to the wound, but see the *Catalogus Universalis* (1700 II) listing: Kenelm Digby, *Eröffnung unterschiedlicher Heimlichkeiten der Natur, vornemlich von einem wunderbaren Geheimniß in Heilungen der Wunden, ohne Berührung, vermöge des Vitrioli, durch die Sympathiam* (Frankfurt, 1700) [not seen]; See also Frank Huisman, *Stadsbelang en standsbesef, Gezondheidszorg en medisch beroep in Groningen 1500-1730* (1992) 195; H. Habernickel, J. Slenders, T. Kerkhoff, ‘Rabus en de Geneeskunde’, in H. Bots (ed.) *Pieter Rabus en de Boekzaal van Europe 1692-1702* (1974) 323-41, here 329; Keith Thomas, *Religion and the Decline of Magic* (1997 [1971]) 190-1.

¹⁷⁰ Ferdinando Abbri, ‘Alchemy and Chemistry: Chemical Discourses in the Seventeenth Century’, in *Early Science and Medicine* V, 2 (2000) 214-26, here 220, 223-4.

¹⁷¹ Reimann, *Versuch* (1713) part VI, 701.

¹⁷² *HBL* 2nd I, 565.

Andreas Ottomar Goelicke (1671-1744)¹⁷³ accused him of ‘plagiarism’ and blamed him for having published ‘so many works in the vernacular language, in this way opening the door of the sanctuary of medicine to charlatans who know nothing of this science except to abuse it’.¹⁷⁴ But this did not detract from Blankaart’s popular reputation. His numerous publications in Latin and Dutch, as well as in German, French and English translation, and their well set out arguments, made a significant contribution to the spread of medical knowledge in the Netherlands and in Europe. In Germany, his *Anatomia reformata*,¹⁷⁵ discussing not only the newest discoveries and best authors on the subject but also his own research based on around two hundred dissections, as well as his ‘manner of embalming all deceased bodies’,¹⁷⁶ was, according to Reimmann, considered ‘very important’, as it enabled anatomists to show their students the compositions of the ‘whole body of the deceased with all its parts at any time, all the more to be esteemed as daily experience shows that newly deceased bodies are not obtainable at all times nor in all places and the *specialiora* cannot be demonstrated in public dissections because of the offensive smell’.¹⁷⁷

iv) Dutch Cartesian Allies

Among other Dutch Cartesian medical writers in the vernacular only Dionysius van der Sterre, Nicolaas Heinsius, Aegidius Daelmans, and Joannes Muys appear to have made an impact in German language medical debate. Of **Dionysius van der Sterre** (Engelen/ North Brabant, 1640 - Curacao, 1691) two letters survive, one to Craanen, the other to Blankaart confirming he was a Cartesian.¹⁷⁸ The Haarlem surgeon Wouter Schouten (1638-1704), an adversary of the ‘harmful teachings’ of the ‘notorious’ Bontekoe, names

¹⁷³ Goelicke was medical professor at Halle (1709), Duisburg (1713), and Frankfurt on Oder (1716-44). See Von Roden, *Universität Duisburg*, 266-7; Löwenstein, ‘Biographien’, 423-4; In his *Institutiones medicinae secundum principia mechanico-organica reformatae* (1735) Goelicke ‘vehemently attacks the iatromechanical school, especially the theories of Friedrich Hoffmann’. See Vandeveld, ‘Bijdrage [...] Blankaart’ (1924) 455.

¹⁷⁴ Nicolas François J. Eloy, *Dictionnaire Historique de la Médecine Ancienne et Moderne* (1773 [1778]) 352-3.

¹⁷⁵ See above, note 161.

¹⁷⁶ For title see ch. III, 131 note 210.

¹⁷⁷ Reimmann, *Versuch* (1713) part VI, 701-2.

¹⁷⁸ Lindeboom, *Dutch Medical Biography*, 1880-1.

Van der Sterre as one of his allies.¹⁷⁹ Van der Sterre reportedly studied under Sylvius, although his name is not found in the Leiden records, and it is not known where he took his medical degree. After practising in Holland for some time, he went to the Dutch Caribbean island of Curaçao where he was appointed by the West India Company to oversee the health of the black slaves. He became a member of the German *Academia Caesarea Leopoldina* under the name of *Valerius Maximus*.¹⁸⁰ Some of his works appeared in Germany in Latin and German translation.¹⁸¹ Van der Sterre, according to Schouten, belonged to the kind of new surgeons who ‘like complete and unabashed blockheads cut through muscles, [...] nerves and vessels’. Indeed, in his *Praktyk der Medicynen* (1687), Van der Sterre confidently asserts that ‘many are more fearful than they need be of cutting through heart-vessels and muscles’ [veele meer vrees, als nodig is, hebben voor het doorsnyden der hart-aders en spieren].¹⁸² An innovative figure in surgery and obstetrics, he was later regarded as a forerunner of the surgeon and obstetrician Hendrik van Deventer (1651-1724).¹⁸³

Nicolaas Heinsius (1656- c. 1707), son of the famous philologist Nicolaas Heinsius, also wrote medical books ‘according to the principles of Cartesius’, as announced by the subtitle of his first work.¹⁸⁴ A reviewer in the Dutch periodical *Boekzaal van Europe* counts Heinsius ‘onder de bestormers der schoolfilozofen’ [among the stormers of the school philosophers].¹⁸⁵ A popular medical writer in the Netherlands as well as in Germany, most of his books were translated into German and republished several times. His Dutch work, *Het ontdekt vergift der zoogenaamde Melk-Cuur* (1693), arguing that milk, claimed by Blankaart as a remedy against gout and arthritis,¹⁸⁶ was harmful and

¹⁷⁹ Baumann, *Cornelis Bontekoe*, 154; Banga, *Geschiedenis*, 655, 704-5.

¹⁸⁰ Lindeboom, *Dutch Medical Biography*, 1880-1.

¹⁸¹ The *Catalogus Universalis* 1700 II; 1701 I; 1706 I; 1707 I, lists: D. van der Sterre, *Collegium-Medico-Practicum, oder eine kurze Beschreibung derer vornehmsten Kranckheiten des menschlichen Leibes mit derenselben Ursachen und Curen nebst einer kurzen Anatomia und Examine Chirurgico-Practico* (Dresden); *Cat. Univers.* 1707 II: D. van der Sterre, *Nova Praxis Medico Chirurgico*; *Cat. Univers.* 1708 I; 1710 I and II: 2nd edn., Dresden, Göttingen, 1710) [not seen].

¹⁸² Baumann, *Cornelis Bontekoe*, 154-5.

¹⁸³ *Ibid.*, 155.

¹⁸⁴ N. Heinsius, *Het ontdekt vergift der zoogenaamde Melk-Cuur, behelsende deszelfs schadelijkheid in Scheurbuik, Gigt en Podagra, lichaam-en longtering en in alle uit het Zuer voortkomende ziekten, beneffens de aanwyzing der geneesmiddelen en manier hoe deze Qualen zeker kunnen geholpen en genezen worden, Klaarlyk volgens de beginselen van Cartesius* (Utrecht, 1693).

¹⁸⁵ Pieter Rabus (ed.), *Boekzaal van Europe*, Nov./ Dec. 1693, part 10, 482-4; Jan ten Brink, *Dr. Nicolaas Heinsius juniour, Eene studie over den Hollandschen schelmenroman der zeventiende eeuw* (1885) 32.

¹⁸⁶ Blankaart identifies wine, especially acidic Rhine-wines, drunk in excess, as a significant cause of

poisonous,¹⁸⁷ was translated into German that same year¹⁸⁸ and republished in 1694.¹⁸⁹ Heinsius's *Armamentarium Sanitatis ofte Wapenhuis der Gezontheid* (Utrecht, 1694), his *Kwynende Venus* (Amsterdam, 1697; 2nd edn. Utrecht, 1700), and *Nauwkeurige Verhandeling van het Podagra en de algemeene Gigt* (Amsterdam, 1698),¹⁹⁰ were equally successful with three German editions each.¹⁹¹ Heinsius, a declared admirer of Van Helmont and Sylvius, even if not agreeing with the latter's theory on the origin of gout which Sylvius sees in the 'succo pancreatico',¹⁹² attributes the causes of gout to *Scharbock*, his explanations echoing those of Bontekoe and Blankaart.¹⁹³

A useful way of determining whether a seventeenth century medical doctor was of the 'Sylvian-Bontekoean school', proposes Thijssen-Schoute, is to consider his attitude to tea.¹⁹⁴ Heinsius, it appears, was a moderate advocate of tea, attributing its potency 'more to the warm water than the herb itself'.¹⁹⁵ For example, he recommends treating podagra (gout) and renal stones with his 'famous' secret powder after his 'usual instruction with tea',¹⁹⁶ but, according to Pieter Rabus, editor of the Dutch journal *Boekzaal van Europe*, 'without bestowing upon tea as much high praise and marvellous virtues as Mr. Bontekoe'.¹⁹⁷ A close connection between Heinsius, Blankaart and Bontekoe seems to be implied from Blankaart dedicating the 1688 Latin translation of

gout, particularly among the rich able to afford them. He advocates treating gout with tea, whose alkaline qualities are intended to counteract the acidic gout and thin the blood. Cold air and water are seen as the origin of *arthritis vaga*, which Blankaart claims to have cured with milk, demonstrating its alkaline-rich properties on the basis of experiments. See Blankaart, *Accurate Abhandlung von dem Podagra und der Lauffenden Gicht* (1690) 34-44, and 238-318: 'Sendschreiben [...] Worinnen Der nützliche Gebrauch der Milch, so wohl vor Gesunde, als Krancke, vornehmlich aber in der Podagra vogestellet, und anbey, Daß solche Milch die allergesundeste und nahrhaffteste Speise seye, erwiesen wird'.

¹⁸⁷ See also Habernickel et al, 'Rabus en de Geneeskunde', 327-8, 333.

¹⁸⁸ Ten Brink, *Nicolaas Heinsius*, 28, names Johann Peter Albrecht as translator. The *Catalogus Universalis* (1693 II) wrongly advertises this first German edition under the name: *Daniel Heinsii warhafftiger Erwiß, daß die so genante Milch-Cur in Scharbock, Gicht, Podagra und allen andern aus dem Sauer herkommenden Kranckheiten gleich schädlich als gifftig sey* (Leipzig, 1693) [not seen].

¹⁸⁹ N. Heinsius, *Warhafftiger Erweisz, dasz die so genannte Milch-Cur, in Scharbock, Gicht, Podagra und allen andern aus dem Sauer herkommenden Kranckheiten ueberaus schädlich sey. Nebenst einer Anweisung durch welche Arzneyen und auf was Art dieselben nach Anleitung des Cartesii können curiret werden. Ueber Dr. Stephan Blancards gerühmten Milch-Nutz* (Leipzig, 1694).

¹⁹⁰ See also Habernickel et al, 'Rabus en de Geneeskunde', 327-8, 333-4.

¹⁹¹ See below, ch. IV, 149-50.

¹⁹² N. Heinsius, *Übel-vexirter und wohl-soulagirter Podagrist* (1703) 8, 30, 34-5 [For full title and editions see below, ch. IV, 150 note 76].

¹⁹³ *Ibid.*, 10, 13-16.

¹⁹⁴ Thijssen-Schoute, *Nederlands Cartesianisme*, 344.

¹⁹⁵ Heinsius, *Warhafftiger Erweisz* (1694) 82; Thijssen-Schoute, *Nederlands Cartesianisme*, 346-7.

¹⁹⁶ N. Heinsius, *Zeug-Hauß der Gesundheit* (1707) 12, 51. For full title and editions see below, ch. V, 150 notes 73 and 78.

¹⁹⁷ Rabus (ed.), *Boekzaal van Europe*, Nov./Dec. 1693, part 10, 485; On Rabus see below, ch. III, 117-18.

Bontekoe's *Fragmenta* (1683), to 'Nicolao Heinsio N. F. D. N. Medicinae doctori praestantissimo, in omni facultate & lingua versatissimo'.¹⁹⁸

From 1687 until 1695 Heinsius was personal physician to the Elector of Brandenburg, practising in the *Residenz-Stadt* Cleves and later in the autonomous jurisdiction of Culemborg. He rose from 'doctor in Culemborg', where he wrote his *Nauwkeurige Verhandeling van het Podagra* and is thought to have lived until 1704, to 'Councillor and first Physician in Ordinary to the Duke of Saxe-Coburg', a position, judging by the title page of the third edition of his *Zeug-Hauß der Gesundheit*, he occupied until at least 1707,¹⁹⁹ Heinsius also wrote the best known Dutch picaresque novel, *Den Vermakelyken Avanturier* (Amsterdam, 1695; 1703; 4th edn. 1715; 5th edn. 1722; 7th ed., 1733; 8th edn. 1756), translated into German, English, French and Italian.²⁰⁰

The Antwerp city physician **Aegidius Daelmans** (or Daalmans; mid-17th cent.-1703) vigorously championed the principles of Bontekoe, Blankaart, and Overkamp both in Antwerp and the Dutch East Indies (Ceylon and Batavia).²⁰¹ Daelmans' 'new reformed art of healing on an acid-alkali basis', *De nieuwe hervormde geneeskunst gebouwd op het acidum en alcali om kortelyk alle ziekten met weinig omslag te genezen*, became a widely read textbook in the Netherlands, in Germany as well as in the Dutch East Indies.²⁰² Among 'thousands of learned men', he singles out Bontekoe, Overkamp and Blankaart as particularly noteworthy. Adopting their acid-alkali system of pathology and treatment methods, consisting of thinning the disease-provoking 'sluggish and thick body fluids' with 'sal volatile oleosum', and rejecting excessive purging and the use of blood-letting,

¹⁹⁸ Thijssen-Schoute, *Nederlands Cartesianisme*, 331.

¹⁹⁹ Ten Brink, *Nicolaas Heinsius*, 30-33.

²⁰⁰ *Ibid.*, 36-8, 210-11.

²⁰¹ In 1687, Daelmans left Antwerp, sailed to the East Indies and took up residence in Ceylon, where he was given a garden to grow medicinal plants. In March 1689, he moved to Batavia and was astonished to find that his treatment methods as a city physician in Antwerp were already being practised in the East Indies, owing to his *Nieuwe hervormde geneeskunst* and Overkamp's publications, through the initiative of the 'Opper Koopman' (the East India Company's chief buyer) and chief medical officer Strykelsbergen, a trained surgeon in charge of all the 'Opper-Meesters' and apothecaries in the bases and garrisons of the Dutch East Indies. Strykelsbergen told Daelmans that due to the new methods yearly expenses for the 'whole of India' [i. e. the Dutch Asian colonies] had been reduced from around 100 000 *guilders* to no more than two thousand 'ducats'. See Daelmans, *Nieuw hervormde genees-kunst* [...] (1694) Preface, and Donald Ferguson, 'A Belgian Physician's Notes on Ceylon in 1687-89', in *Journal of the Royal Asiatic Society*, Ceylon Branch (1887) X, 1-34.

²⁰² Dutch editions: Amsterdam, 1687; 1689; 1694; 1698; 1703; 1720; According to Haeser, *Lehrbuch* II, 376, and Baumann, *François Dele Bœ Sylvius*, 198, the first edition was published in Amsterdam in 1684, but Ferguson, in 'A Belgian Physician's Notes', 2, confirms the first edition being of 1687.

Daelmans declared traditional medical practice to be harmful. He prepared his own medicines and, like Bontekoe, claimed to heal more illnesses than others with very few remedies.²⁰³ According to the *Catalogus Universalis*, the first German edition, translated from Dutch by the Berlin physician Johann Biering, was published by Völcker in Frankfurt on Oder in 1693, first under the title *Neue Chirurgie, auff das Alkali und Acidum gerichtet*, and in the same year, and from then on, as *Neu abgefaste Heil-Kunst auff den Grund Alkali und Acidi erbauet*.²⁰⁴

Salomon van Rusting (1610-1688), practicing physician in Zuid-Schermer (near Alkmaar), may be cited as an example of an initially enthusiastic supporter and admirer of Bontekoe, Blankaart, Overkamp, and ally of Daelmans, but later became an open opponent. In the 1683 edition of his *Nieuwe Veld-Medicine En Chirurgie*, Van Rusting states that he would not bother to crusade against the medical elders with their elements, humours and temperaments, because

Bontekoe, like another *Tammerlan*,²⁰⁵ has destroyed the old monuments and eradicated their foundations, so that the few obstinate people still holding on to them, are like remnants of a forsaken sect: he [Bontekoe] with Blankaart and Overkamp, who have climbed the highest mountains of honour, enlighten [verlichten] the world as new suns, with a light so bright and clear, that all the false notions of antiquity disappear before them and their memory is thought worthless.²⁰⁶

In later years, however, Van Rusting had second thoughts about the works of Blankaart and Daelmans. In his *Bedenkingen op de werken van de Heeren Stephanus Blankaart, philosophiae et medicinae doctor tot Amsterdam en Aegidius Daalmans, gezworen stads doctor tot Antwerpen. Waarin betoond worden de onzekerheden hunner stellingen en geneeskunde gebouwd op de gronden van't alcali en acidum* (Amsterdam, 1702) he stresses the uncertainties of their opinions and medicine based on acids and alkalies. He came to reject Descartes theories and adhere firmly to the old doctrine of the humours.

²⁰³ Daelmans, *De nieuw hervormde geneeskonst* (1687) Preface.

²⁰⁴ Subsequent editions of Daelmans' bestseller were published in Berlin, 1694; 1701; 1714; 1715; Frankfurt on Oder, 1694; 1702; 1712; Cüstrin [Brandenburg town, now in Poland, and spelled Kostrzyn], 1703).

²⁰⁵ The celebrated fifteenth-century Mongol-Turkic conquerer of Central Asia, Tamerlane the Great.

²⁰⁶ Salomon van Rusting, *Nieuwe Veld-Medicine En Chirurgie, gegront op reden en ervaertheyt* [...] (Amsterdam, 1683) Preface.

He opposed many specific remedies advocated by the reformers. Tea, for example, he thought useful only to control fevers.²⁰⁷

The physician and surgeon **Joannes Muys** (or Joan Muis; 1659-99) was not as prolific as Bontekoe and Blankaart, but his surgical observations, published in instalments in Latin,²⁰⁸ Dutch,²⁰⁹ English,²¹⁰ and, with varying titles, in German,²¹¹ were highly regarded. Waldschmidt's former pupil Martin Harmes, then medical doctor in Bremen, in a letter to Muys, on 10 April 1688, refers to Muys's high standing in the Netherlands and in Germany, with many medical colleagues of 'high and low rank', including the 'noble Gehema', praising him 'to the skies'.²¹² Muys received encouraging letters from Germany, Poland and Holland, requesting him to publish further instalments of his *Praxis Medico-Chirurgica Rationalis*, the German translator declaring that of all authors old and new no one had pleased him more than Muys, inducing him to 'translate this useful and highly agreeable author into German'.²¹³

Muys was born in Arnhem, matriculated as a medical student at Leiden on 22 September 1676, and was promoted to medical doctor at Utrecht on 12 December 1679, after defending the thesis *De Arsenico assumpto*. He appears to have been particularly interested in surgery because he later had a large surgical practice at Arnhem. He is said to have also practised at Steenwijk.²¹⁴ Muys condemned the 'pathetic and wrongly based prejudice' of physicians who discredited those of their colleagues also practicing surgery, 'as if it was ignoble to heal external ailments of the human body rather than the internal ones'.²¹⁵ In Muys's view, much was still amiss in the state of medicine of his time. Like

²⁰⁷ Thijssen-Schoute, *Nederlands Cartesianisme*, 348; Vandeveld, 'Bijdrage [...] Blankaart' (1924) 489.

²⁰⁸ J. Muys, *Praxis Medico-Chirurgica Rationalis, Seu Observationes Medico-Chirurgicae secundum solida verae Philosophiae fundamenta resolutae* (Leiden, 1683, 1685-90; Padua, 1709; Naples, 1727) [not seen].

²⁰⁹ J. Muys, *Redelyke Heelkonstoeffening Of Heelkonstige Aenmerkingen na de vaste gronden der waerachtige Filozophie opgelost* (Rotterdam, 1684-5; Leiden, 1690; Amsterdam, 1699); J. Muys, *XII Tien-tallen, behelsende een redelijke heel-konst-oeffening of heel-konstige aenmerkingen, na de vaste gronden der waerachtige Filozophie [...]* (Amsterdam, 1699).

²¹⁰ J. Muys, *A Rational Practice of Chyrurgery, Or: Chyrurgical Observations Resolved according to the Solid Fundamentals Of True Philosophy* (London, 1686).

²¹¹ J. Muys, *Neue vernünftige Praxis der Wund-Artzney* (Hannover, Berlin, Frankfurt, 1688; Hannover, 1691; 1692; New edition with seven parts, Berlin, 1694); Also published under the title *Der Treu-gesinnete Samaritter, Das ist [...] Vernünftige Praxis der Wund-Arzeney, Oder fünf Abhandlungen Nach den festen Gründen der Neuen und Wahren Philosophie erkläret* (Bremen, 1694).

²¹² Muys, *XII Tien-tallen* (1699) part 7, 227.

²¹³ Muys, *Treu-gesinnete Samaritter* (1694) Translator's preface, and 371.

²¹⁴ Lindeboom, *Dutch Medical Biography*, 1403-4.

²¹⁵ Muys, *Redelyke Heelkonstoeffening* (1684-5) Preface to part 5; Muys, *Treu-gesinnete Samaritter* (1694) 128.

Bontekoe, Blankaart, and Overkamp (who had declared Aristotle the ‘first hocus-pocus-master of the sciences’ whose ‘obscure philosophy and unfounded reasonings had infiltrated, confused and corrupted all disciplines, including medicine’),²¹⁶ Muys rejected Aristotelian philosophy as ‘trivial, garrulous and completely useless for a medicus’.²¹⁷ And although Cartesian philosophy had superseded the ideas of the ancients, and the whole of medical knowledge was in a ‘process of transformation’, most medical doctors remained ‘unpractised in both surgery and philosophy’. Many actually not only feared the ‘true’ philosophy, they also deterred others who were eager to learn, deeming it ‘contentious with the Christian religion’ in that it gave those who heeded it cause to turn away from God. But, Muys asserts, ‘they are miserably mistaken, for this philosophy proves with very sound and obvious reasons the nature of God, the most perfect Being, and the immortality of our souls’.²¹⁸ Like that of his Cartesian allies, Muys’s principle was that ‘the whole of medicine must be changed’ with philosophy an ‘inseparable part of it’. In this way, medicine would prove to no less advantage than printing had formerly been to scholarship, gunpowder for war, and the compass for travel - these three discoveries which had, to no small extent, improved the nature of things in the world.²¹⁹

Muys, like his Cartesian allies, was convinced that ‘the whole of medicine has now been enlightened [opgeheldert] to the highest degree’, particularly through ‘outstanding’ philosophers like Theodor Craanen and Bontekoe who carried on Descartes’ work.²²⁰ He fervently believed in the scientific progress of medicine through advances in anatomy and physiology, and use of scientific instruments, but, interestingly, saw no use for the microscope in medicine. The microscopist Antoni van Leeuwenhoek (1632-1723) had discovered (in 1673) that human blood consisted of ‘small red Globes, floating in a Chrystalline Humor’ which, coagulating, descended to the bottom while the serum floated above. Muys thought the microscope

certainly a strange and pleasant Invention, but of no use in the Medicinal Practice. For they, who (from this ground) endeavour to deduce the Causes and Cures of Fevers, and other Diseases, seem to me to trifle out the time, and lose all their labour;

²¹⁶ [Overkamp] H.O.M.D., ‘Vernünfftige Gedancken über die Aristotelische und Cartesianische Philosophy’, in Waldschmidt and Dolaëus, *Epistolae* (1688) 229-44.

²¹⁷ Muys, *Redelyke Heelkonstoeffening* (1684-5) Preface to part 1.

²¹⁸ Ibid., Prefaces to parts 3-4 and 5; Muys, *Treu-gesinnete Samaritter* (1694) 119.

²¹⁹ Muys, *Redelyke Heelkonstoeffening* (1684-5) Preface to part 1.

²²⁰ J. Muys, ‘Den herlevenden Podalier Ofte Een ‘t samenspraak tussen Podalier en Philipater’, in Muys, *XII Tien-tallen* (1699) 386-7; Muys, *Treu-gesinnete Samaritter* (1694) 297.

whereas rather, had they respect to Acidity, Salt, Bitterness, Sweetness, and other properties (undoubtedly contained in the Blood) they would certainly thence reap far greater understanding in cure of the sick.²²¹

Bontekoe, likewise, while deploring that no true theory of fevers had yet emerged, observed, 'I know indeed that some also talk about the globules in the blood, discovered by the exact Mr. Leeuwenhoek as a new basis for fevers, but the slightest attention is enough to realize that these are new speculations of no use to come to a clear understanding of fevers.'²²² In modern medical practice it is precisely the erythrocyte-sedimentation-rate that, among other things, provides proof of inflammatory processes in the body. But the acid-alkali theory which pervaded seventeenth and early eighteenth century medical thinking remained narrowly focused on its preventive, health-maintaining application to the human body, stressing the necessity of its use for curing disease, as was persuasively argued by the English translator of Muys's *Rational Practice of Chyrurgery*:

[This] highly-to-be-commended Doctrine of the power of Alcalies over Acidums, is of so great a use and energy, that all Ingenious Practitioners will confess (if they have made any Observations on their own Practice) that there is no Dolour whatsoever, incident to the Body of Man, that hath been by them subdued, but the Remedy thereof hath been of an Alcalic-nature; it being apparent to all genuine Artists, that Diseases generally take beginning from Darkness, Anger, Terrour, or Madness, from which all *Acidums* do arise; and that the only means of pacifying these Furies are Light, Sweet, Soft, Smooth and Friendly Medicaments, the Nature of which is comprised under that general Word Alkali.²²³

Next to employing remedies of an 'Alcalizate Nature' in their right mixture and dose, the medical practitioner was to 'eschew and relinquish all such things as promote Acidity, and excite Anguish, as generally do *Catharticks* too frequently used, Tents and Dorsils in Wounds, making of large Orifices in Imposthumes, subjecting Wounds and Ulcers to the Air, and all sorts of unctuous Medicines'.²²⁴ The acid-alkali theory, adopted by some English physicians in the 'later 1680s and early 1690s', despite opposition from the much respected Robert Boyle (1627-91), enjoyed some popularity also in England, with

²²¹ Muys, *A Rational Practice* (1686) 85.

²²² Bontekoe, 'Laatste reden' (1681) 50.

²²³ Muys, *A Rational Practice* (1686) 'To the Reader', A3.

²²⁴ *Ibid.*

patients demanding to have their overly ‘acidic’ blood treated with alkaline remedies.²²⁵ In France, the physician Nicolas Andry de Boisregard complained about the ‘fashion for chemical theories’:

Acids and Alkali’s are put to too many uses, and the Daily abuse of that Doctrine by the half-way Learned, is a thing to be lamented. ‘Tis an Induction ill drawn from some Experiments of Chymistry, which they unite with *Descartes’s* Philosophy: They borrow the *Corpusculums* and the connexion of Matter from this Philosophy, to which they join the *Acids and Alkali’s*, which Chymistry discloses to ‘em and believe that by this means they have found the Key and Secrets of all Physick.²²⁶

v) Scientific Instruments

One could assume that Cartesian corpuscularism and the preoccupation with ‘subtle’ anatomy since the 1650s would have more strongly encouraged the experimental application of the microscope to medicine but, as Ruestow points out, ‘our conceptions of science and knowledge limit the methods and techniques we recognize, and the accomplishments of our predecessors shape what we aspire to do’.²²⁷ Microscopical observations ‘clearly demonstrated the falseness of Aristotle’s belief in the homogeneity of substances’, and it not surprising that Aristotelians appear to have been uninterested in microscopy.²²⁸ Yet, while Cartesian physicians such as Blankaart, Bontekoe, Overkamp, and especially Anton de Heide,²²⁹ asserted the value of microscopic research, at the same time, the mechanistic theoretical dogmatism of Cartesianism restricted appreciation of its newly revealed technical capabilities and limited its application for understanding bodily processes and the causes of illness. Despite significant advances in the techniques of preparing lenses, constructing microscopes and increasing magnification achieved by Christiaan Huygens, Spinoza, Renier de Graaf and Jan Swammerdam, besides Leeuwenhoek, there was no significant breakthrough in utilizing

²²⁵ Cook, *Trials of an ordinary doctor*, 19-20.

²²⁶ Catherine Wilson, *The Invisible World. Early Modern Philosophy and the Invention of the Microscope* (1995) 168.

²²⁷ Ruestow, *The Microscope*, 61.

²²⁸ C. H. Lüthy, ‘Atomism, Lynceus, and the Fate of Seventeenth-Century Microscopy’, in *Early Science and Medicine, A Journal for the Study of Science, Technology and Medicine in the Pre-modern Period* I, 1 (1996) 12-27, here 14.

²²⁹ See below, pp. 93-4.

the microscope for medical purposes.²³⁰ Cartesian commitment to dogmatic deduction and preoccupation with ‘invisibly small structures’ afforded ‘little incentive to resort to the awkward new microscopes and their problematic images or to search for new techniques that might open up new realms for microscopic explanation’.²³¹

Craanen, for example, who knew both Swammerdam and Leeuwenhoek, like many leading medical authorities at the time, reflects an ambivalent attitude in his works to the use of the microscope. He refers to it to challenge conventional anatomical ideas but apparently more often to ‘disprove its value for the exploration of the minute structures of real significance’. Thus, when Craanen suggests the origin of fevers is a disturbance of the particles of the blood, he ignores Leeuwenhoek’s discovery of the red corpuscles and expressly states that the relevant particles were too minute to be seen with the microscope.²³² In the same way he explains erysipelas and inflammations as resulting from particles being ‘trapped in the wrong pores’ without seeing any need to explore whether this could be observed.²³³ As this response indicates, the inhibiting effect of theory may have been reinforced by the sheer technical difficulty of constructing readily usable instruments and raising levels of magnification, and all the more so in that the leading practitioner, Leeuwenhoek, kept the secrets of his craft jealously to himself and effective microscopic observation entailed extraordinary manipulative dexterity and labours, as well as unusual tenacity.²³⁴

Leibniz, like Huygens, was justifiably critical of the dogmatic tendency in Cartesianism and, in reference to Craanen, remarked, ‘I care more for a Leeuwenhoek who tells me what he sees than a Cartesian who tells me what he thinks.’²³⁵ Bontekoe and his allies, however, strongly influenced as they were by Cartesian theory, disparaged mere theorizing about particles, pores and subtle matter as useless, Bontekoe urging anatomists to investigate with knife, injection syringe, and microscope.²³⁶ Bontekoe, who also knew Leeuwenhoek personally and visited him several times,²³⁷ ‘maintained that the microscope offered support for the assumption of pores in all solid bodies’.²³⁸

²³⁰ Only in the 1830s did the microscope become part of the curricula in the medical schools of Europe. See Ruestow, *The Microscope*, 291.

²³¹ Ibid., 62-3, 102, 290.

²³² Ibid., 63-4, 83, 189.

²³³ Marian Fournier, *The Fabric of Life, Microscopy in the seventeenth century* (1996) 132.

²³⁴ Ruestow, *The Microscope*, 19, 152-4, 157, 290-1, 293.

²³⁵ Ibid., 67, 149; Leibniz corresponded with Leeuwenhoek and also visited him during his two-months stay in Holland in 1676. See Israel, *Radical Enlightenment*, 506.

²³⁶ Ruestow, *The Microscope*, 66; Bontekoe, *Werken* (1689) I, Preface, 35, 45.

²³⁷ Snelders, ‘Antoni van Leeuwenhoek’s mechanistic view’, 71; Ruestow, *The Microscope*, 170.

Similarly, Blankaart, in his *Collectanea Medico-Physica*, proposed abandoning ‘idle speculations’ for discoveries by means of magnifying glasses.²³⁹ Elsewhere he asserts, ‘Who will deny that by means of chemistry, anatomy [and] magnifying glasses more has been discovered in thirty years than in all former times?’²⁴⁰ In his *Verhandelinge van het Podagra* (1684), he discusses investigating milk with magnifying lenses, interpreting its numerous globules as giving rise to cheese formation.²⁴¹ Yet, though including a substantial number of microscopical descriptions and illustrations in his *Nieuw hervormde anatomie* (1686 edn.), he does not cite the microscope as a requisite instrument of research in anatomy but rather the syringe, used for injecting coloured warm wax and inks into the vessels to display their network in soft organs, a new technique originally devised by Swammerdam, De Graaf and Ruysch.²⁴² Blankaart, Bontekoe and, later, Boerhaave agreed that injection ‘confirmed the vascular structure of the body’s solid parts’.²⁴³ Bontekoe emphasized the role of the injection syringe, as well as the microscope, for demonstrating the body’s vascularity and saw microscopic blood vessels as the first clear evidence that, beyond visible vessels lay many more that even the microscope could not reveal.²⁴⁴

Far more than the small-scale microscope, injection with its more obviously spectacular effects was ‘prized as the key to the continuing advance of subtle anatomy’ which, since the rediscovery of the lacteal vessels and finding of the lymphatics, as well as other glands, fibres, and very small vessels with the aid of the microscope by the Italian comparative anatomist and embryologist Marcello Malpighi (1628-94), had been eagerly taken up in the Netherlands. Swammerdam, Ruysch, De Graaf, and Stensen (Steno) used both the microscope and injection,²⁴⁵ as did also less well known researchers in subtle anatomy such as the Middelburg physician Anton de Heide (1646-c.96), the ‘third Netherlander after Swammerdam and Leeuwenhoek to have focused on the microscope in the late seventeenth century’.²⁴⁶

²³⁸ Ruestow, *The Microscope*, 66.

²³⁹ Ibid., 84; Blankaart, *Collectanea* (1680) Dedication and Preface. See also 144-6, 150-1, 200-1, 204, 226, and A. J. J. Vandevelde, ‘2de Bijdrage [...] Blankaart’, in *Verslagen en Mededeelingen* (1925) 677-97, here 686-7.

²⁴⁰ Blankaart, *Neue Kunst-Kammer* (1690) 3.

²⁴¹ Blankaart, *Accurate Abhandlung von dem Podagra* (1690) 261-2; Vandevelde, ‘Bijdrage [...] Blankaart’ (1924) 479.

²⁴² Ruestow, *The Microscope*, 82-8.

²⁴³ Ibid., 93.

²⁴⁴ Ibid., 94.

²⁴⁵ Ibid., 41-8, 81-9, 94.

²⁴⁶ Ibid., 81-2, 84, 94, 207, 291; De Heide’s microscopic observations feature in the revised edition

Conceptions of vascular physiology in the Netherlands, chiefly adopted by Cartesian physicians, became powerfully influenced by heightened awareness of the secretion and movement of body fluids. This promoted an image of the body as a hydraulic system with glands assuming such importance that according to Bontekoe and other physicians, the ‘skin, liver, spleen, lungs, brain, pancreas, and almost everything else was a heap or tissue of glands’ and the ‘sole purpose of the blood’s circulation was the separating out of fluids by the glands’.²⁴⁷ In Ruestow’s authoritative account of microscopic and anatomical research

...the sieves of glandular secretion were hence also transformed into complexes of vessels. The blood produced all kinds of fluids when it was strained through different kinds of pipes as if through sieves, wrote Blankaart, who ascribed the diversity of these secreted fluids, as well as the variety of substances in the living body, solely to the size of particles and the capacity of pipes.²⁴⁸

Overkamp declared that ‘bodies must contain as many different small pipes and vessels as there are different parts that have to be nourished’. The development of vascular physiology reached its peak in the work of Boerhaave, whose *Institutiones medicae*, as Albrecht von Haller testifies, were used in teaching academic medicine virtually throughout Europe, though medical interest in the microscope waned after the 1680s until interest revived again in the 1740s.²⁴⁹

Paradoxically, though the writings of Craanen, Bontekoe, Overkamp and Blankaart, as Ruestow and Trevisani have observed, would have been inconceivable without the recent discoveries of new glands and ducts which themselves had been largely the result of research with the microscope and the technique of injection,²⁵⁰ their acid-alkali theory seems to have given little further impetus to microscopic research. A further factor contributing to the waning interest in microscopical research in the early eighteenth century was the triumph of Newtonian mechanics which tended to marginalize the study

of Cornelis vande Voorde’s *Nieuw lichtende fakkel der chirurgie, of hedendaagsche heelkunst* (Middleburg, 1680), republished by De Heide; L. C. Palm, ‘Antoni van Leeuwenhoek’s Malacological Researches [...]’, in Palm and Snelders, *Antoni van Leeuwenhoek*, 153-67, here 154, 164; De Heide, who had studied under Sylvius in Leiden, discovered the ciliar motion in mussels and undertook original experimental research in physiology and pathology. See G. A. Lindeboom, ‘Anton de Heide als proefondervindelijk onderzoeker’ in *TGGNWT* VI, 3 (1983)121-34.

²⁴⁷ Ruestow, *The Microscope*, 89-91.

²⁴⁸ *Ibid.*, 91.

²⁴⁹ *Ibid.*, 92, 280; Fournier, *Fabric of Life*, 185; Lüthy, ‘Atomism’, 26-7.

²⁵⁰ Edward G. Ruestow, ‘The rise of the doctrine of vascular secretion in the Netherlands’, in *Journal of the History of Medicine and Allied Sciences* XXXV (1980) 265-87, here 268-70;

not only of minute substructures but, outside of medicine, the life sciences more generally.²⁵¹

The inconclusive nature of some of the claims made on the basis of microscopic demonstration undoubtedly added to the slackening of interest in this form of research. As much as it revealed, microscopy also served to intensify disagreements such as the widespread opposition to Leeuwenhoek's claims about the role of the spermatozoa, and 'corroborate' and reinforce theoretically entrenched misconceptions like Blankaart's claim that the microscope 'teaches us not only that the complete plant is contained in the seed but that the entire little animal is in the egg before incubation; and who, being guided by reason, would deny the same in the eggs of women?'²⁵² Bontekoe and Overkamp also embraced this influential new doctrine, then enjoying great favour in Cartesian medical circles, which assumed 'nothing more substantial than a spirit, vapour, odor, or "irradiation" from the semen made contact with the egg';²⁵³ for, as Bontekoe put it, 'it is not life which the eggs receive from the male seed but it is the warmth they get from it that sets it in motion.'²⁵⁴

The thermometer does not yet feature in Dutch late seventeenth century medical works, for although Sanctorius Sanctorius (1561-1636), professor of theoretical medicine at Padua, had attempted to calculate body temperature in physiological experiments and clinical practice by devising a rudimentary thermometer, the more developed mercury thermometer invented by the instrument maker Daniel Gabriel Fahrenheit (1686-1736) did not materialize until 1714.²⁵⁵ Fahrenheit, originally from Danzig, settled permanently in Amsterdam, in 1717, and, in 1718, presented a number of thermometers to Boerhaave and the scientist and philosopher Willem Jacob 's Gravesande (1688-1742), of which one is preserved at the Museum Boerhaave in Leiden.²⁵⁶ The first four editions of the English version of Blankaart's medical dictionary (1684; 1693; 1697; 1702) make no mention of the thermometer but the fifth (1708) and subsequent editions list the 'Thermometron', defined as 'Natural Heat, which is perceived by the Pulses: It is also

Trevisani, *Descartes in Germania*, 276.

²⁵¹ Lüthy, 'Atomism', 24-7.

²⁵² Ruestow, *The Microscope*, 229, 239-40.

²⁵³ *Ibid.*, 172.

²⁵⁴ Bontekoe, *Nieuw Gebouw* (1680-81) 151.

²⁵⁵ Andrew Wear, 'Medicine in Early Modern Europe', 259, 261; Porter, *Greatest Benefit*, 288, 344.

²⁵⁶ *Museum Boerhaave Catalogue* (1991) 13.

a Pipe of Glass, with a round Capital, whereby are discovered the Degrees of Heat, A
Termometre', although no connection is made with measuring temperature in fevers.²⁵⁷
Boerhaave did use the thermometer in cases of fever and his student Anton de Häen
(1704-76) considered a fall in temperature towards normal levels as a sign of recovery.²⁵⁸

²⁵⁷ Blankaart, *Physical Dictionary* (1708) 290.

²⁵⁸ Porter, *Greatest Benefit*, 344.

Chapter Three

Medicine and the Early Enlightenment in Germany

i) Intellectual Trends

In Germany, advocacy of the ‘new’ medicine by Dutch Cartesian medical authors and their German supporters, from the 1680s onward, and during the early decades of the eighteenth century, coincided with the attempts of Early Enlightenment thinkers such as Christian Thomasius, Pufendorf, Leibniz, and Wolff, to reform major aspects of society and culture, in part inspired by ‘natural law’ concepts encouraging the development of ethical social ideals detached from the theological sphere. Inherent in their aims was their campaign to combat superstition, popularize knowledge, and extend the use of the German language.

Thomasius, formerly in the shadow of Leibniz, Wolff and Kant, is now generally agreed to have been a central figure in initiating the Early Enlightenment in Germany by turning against the rigidly orthodox scholasticism and Protestant theological dogmatism dominating German universities, and their tendency to discourage independent critical thinking.¹ Without being a Cartesian himself, Thomasius, with his practice-oriented, eclectic approach, saw the necessity for a Cartesian-inspired critical appraisal of all traditional knowledge, including medicine. His demand for the precedence of reason in all things and for a progressive empirical science made him a key champion of Early Enlightenment thought throughout Germany and the Baltic.²

A central feature of the new philosophical eclecticism,³ widely seen as the most

¹ Gagliardo, *Germany*, 180-1, 184; As Peter Gay expresses it: ‘Lutheranism had long lost the crusading fervor and intellectual vigor of its founder and settled down into a rigid, obtuse, authoritarian clerical hierarchy more interested in the minutiae of observance and quibbles on dogma than the great tenets of faith. When it came, the revolt against this torpid autocracy went in two directions: the anti-intellectualism of the Pietists and the intellectualism of religious metaphysicians like Christian Thomasius and Christian Wolff.’ See P. Gay, *The Enlightenment, An Interpretation: The Rise of Modern Paganism* (1977) 328.

² Hans-Jürgen Engfer, ‘Christian Thomasius, Erste Proklamation und erste Krise der Aufklärung in Deutschland’, in Schneiders (ed.), *Christian Thomasius*, 22-36; Pott, *Aufklärung und Aberglaube*, 4-6.

³ Jacob Thomasius, who was the first to formulate the distinctive eclectic philosophy of the German Enlightenment, always insisted on the great difference between this new kind of eclecticism and older forms of eclecticism which he regarded as uncritically syncretist. See Albrecht, *Eklektik*, 298-301, 394. See also Martin Gierl, *Pietismus und Aufklärung, Theologische Polemik und die Kommunikationsreform der Wissenschaft am Ende des 17. Jahrhunderts* (1997) 488-513.

fitting response to the claims of the Cartesians and other advocates of the ‘new philosophy’ in late seventeenth century Germany, was to combine, by means of careful critical reassessment, and in a coherent fashion (in contrast to ancient eclecticism), elements valid in the old learning with what Eclectics saw as best and most convincing in the new;⁴ this new *philosophia eclectica* being what Christoph August Heumann (1681-1764) at Göttingen, in his German language periodical *Acta Philosophorum* (1715-26), repeatedly calls the ‘best kind of philosophy’.⁵ Hence, while they disliked the sectarian exclusive claims of the Cartesians and the tight systematic character of their system, at the same time they looked positively on some features of Cartesianism, contending that ‘nothing should be overlooked that may help to reveal the truth’.⁶ Thus, leading figures among the academic Eclectics such as Jacob Thomasius (1622-84) at Leipzig, Christian Thomasius at Halle, Johann Franz Budde [Buddeus] (1667-1729), first at Halle and, from 1705, at Jena, stressed the importance of freedom of thought, rejecting Cartesian claims to have replaced all previous learning with a unified new mechanistic system.⁷

Cartesian theory, though never a dominant force, should not therefore be underestimated in the making of the German Early Enlightenment, especially in the field of medical study. In Germany, like the Netherlands, iatrochemical ideas tended to be closely linked with Cartesian mechanism, in contrast to France, where iatrochemistry was widely influential from the 1660s onwards but rarely combined with the mechanical philosophy, owing to the royal ban on the teaching of Cartesianism, under Louis XIV, at any rate before the 1690s.⁸ In consequence, there was a small but vocal minority of physicians in Germany who not only accepted the proposals for practical medical reform of Bontekoe and his allies but also their philosophical premises.

Besides Eclecticism and Cartesianism, three other major impulses in the making of the German Early Enlightenment were the Wolffian system, preoccupation with Natural Law theory, and Pietism. The rationalized ethics of Wolffianism were based chiefly on Leibnizian ideas, such as the divinely ordained pre-established harmony of all things, and

⁴ Schneider, ‘Eclecticism’, 86-90, 92.

⁵ C. A. Heumann, *Acta Philosophorum, Das ist Gründliche Nachrichten aus der Historia Philosophica, Nebst beygefügeten Urtheilen von denen dahin gehörigen alten und neuen Büchern* (Repr. 1997 [1715-26]) here (1715) part 1, 20-1, part 2, 192-5.

⁶ Schneider, ‘Eclecticism’, 91.

⁷ Albrecht, *Eklektik*, 286, 299-301, 305, 394, 407-8.

⁸ Brockliss and Jones, *Medical World*, 144-9.

‘monadology’,⁹ but also on Descartes. Highly systematized, and effectively publicized in both Latin and German, it began to become dominant in the second decade of the eighteenth century, at first only in a few universities, like Halle and Marburg, but eventually gained great influence throughout Protestant northern Europe, and later also in the Catholic German speaking lands.¹⁰ More relevant during the first phase of the German Enlightenment was the impact of Natural Law theory. The Natural Law theories of Pufendorf, Thomasius, Leibniz, and Wolff, for their part, gave rise to a new type of awareness of social, administrative, and ethical obligation and responsibility, distinct from theological criteria, by postulating and elaborating a partly ‘secular moral framework for communal life, private morality, and just government’, including codes of professional conduct.¹¹ Pietism, as a movement of religious revival and social reform, won considerable support and acquired an impressive momentum in much of Lutheran Germany during the last quarter of the seventeenth century and remained a powerful influence throughout the eighteenth. Despite the tendency of the Pietists to provoke bitter strife and disputes with Lutheran orthodoxy which set some of the Protestant princes and city governments against them, the court in Berlin tended to support them, especially during the reign of Friedrich Wilhelm I (1713-40).¹²

Pietist emphasis on *theologia practica*, that is the realization of Christian belief in practice, in daily life, education, and one’s behaviour,¹³ and its discarding of the traditional Lutheran stress on dogma, generated a distinctive but ambivalent attitude towards the new enlightened trends. On the one hand, the Pietists’ critical approach to traditional religion and confessional polemics made them sympathetic to projects of religious, and thus social, reform and to certain types of practical innovation in education and academic life. The theologian August Hermann Francke (1663-1727) at Halle, for example, through his ‘strong church discipline’ and ‘outspoken preaching’ against the prevailing ungodly lifestyle, as Mary Fulbrook observes, as well as his practical reform

⁹ Baas, *Outlines*, 595, aptly describes the Leibnizio-Wolffian monadology as being ‘formed by the assumption of minute, indivisible, intelligent beings, the so-called monads, which as such are capable of forming conceptions, and are constituents of all bodies and of all beings’.

¹⁰ Gagliardo, *Germany*, 187, 222-5, 230; Paul Guyer, ‘Christian Wolff (1679-1754)’, in Robert Audi (ed.), *The Cambridge Dictionary of Philosophy* (1996 [1995]) 859-60.

¹¹ Hunter, *Rival Enlightenments*, 7, 127, 149, 152, 155-8, 171-80, 223-51, 272; Schneewind, *Invention of autonomy*, 118-40, 159-66, 236-59, 431-44; Johanna Geyer-Kordesch, ‘Natural Law and Medical Ethics in the Eighteenth Century’, in Robert Baker, Dorothy and Roy Porter (eds.), *Medical Ethics and Etiquette in the Eighteenth Century* (1993) 123-39, here 125-36.

¹² Gagliardo, *Germany*, 181-4; Fulbrook, *Piety and Politics*, 132-7, 141-6, 153-4, 161-73, 179; Geyer-Kordesch, ‘German medical education’, 185, 187, 199.

¹³ Hinrichs, *Preussentum*, 14-17; Fulbrook, *Piety and Politics*, 93, 140-1, 153-73.

initiatives – his ‘world-renowned orphanage, schools and associated enterprises’ and supportive measures for the poor, like the *Freytische* for needy students at Halle university – became not just one of the most influential Pietist leaders but a force for social change in Brandenburg-Prussia.¹⁴ Both the Pietists’ theological outlook, and their practical orientation, led to their giving a positive welcome to the medical theories of Georg Ernst Stahl.

The main proponents of Stahl’s holistic approach to body and soul, reason and emotion, were almost all theologians, or theologian-physicians, who fused his doctrines with Pietist contemplative thought, religious conversion and reforming initiatives, culminating in what has been termed an *Instauratio*, a ‘radical Protestant renewal of knowledge and insight’, spread in the German vernacular to reach a wide readership and, like (as well as in conscious opposition to) the initiatives of the Dutch Cartesian medical reformers and their followers, designed to change people’s perceptions of illness and attitudes to health care.¹⁵ Where the works of Bontekoe, Blankaart, Overkamp, Daelmans, Gehema, and, to a lesser extent, Muys and Heinsius, informed the educated lay-reader about new medical views and perspectives according to Cartesian principles, besides new methods of medical practice, the Pietists’ markedly different approach lay in their emphasis on ‘spiritual growth’ and guidance, in aid of which the body, the ‘instrument’ of the incarnate soul and ‘essential vessel of thought and feeling’, must be preserved to ensure ‘psycho-somatic’ good health.¹⁶ Their antipathy to Cartesian dualism and *medicina mechanica* rendered them basically unsympathetic to the doctrines of the Dutch medical reformers who they saw as reducing nature to mere mechanism and matter.¹⁷ The anti-Cartesian physician, former Pietist and ‘radical separatist’ Johann Conrad Dippel (1672-1734), fiercely opposed to a mechanist conception of nature as an ‘atheistic clockwork’, complained, in 1713, that the ‘newer’ philosophy had

¹⁴ Fulbrook, *Piety and Politics*, 154-60; Hinrichs, *Preussentum*, 17-129; Geyer-Kordesch, ‘German medical education’, 187-93; Johanna Geyer-Kordesch, ‘Georg Ernst Stahl’s radical Pietist medicine and its influence on the German Enlightenment’, in Cunningham and French, *Medical Enlightenment of the Eighteenth Century*, 67-87, here 73-5, 78-82.

¹⁵ Geyer-Kordesch, *Pietismus*, 2-3, 7, 53-4, 79-81, 118-39; Geyer-Kordesch, ‘Georg Ernst Stahl’s [...] medicine’, 84-7.

¹⁶ Johanna Geyer-Kordesch, ‘Passions and the ghost in the machine: or what not to ask about science in seventeenth and eighteenth-century Germany’, in Roger French and Andrew Wear (eds.), *The Medical Revolution of the Seventeenth Century* (1989) 145-63, esp. 147-8, 161-2; Geyer-Kordesch, ‘Georg Ernst Stahl’s [...] medicine’, 80-2.

¹⁷ Geyer-Kordesch, ‘Georg Ernst Stahl’s [...] medicine’, 79-81; Geyer-Kordesch, *Pietismus*, 79-81.

gained the upper hand to such an extent that even among the artisans and peasants one encounters those who, taken in by such titbits [Lekkerbißlein] and philosophical secrets [passed on to them] either from the pulpit or books available in the mother tongue, always lug a heap of Cartesian bits [Theilgen] around and by this means mix heaven and earth and [claim to] explain the hidden virtues of things exceedingly well.¹⁸

In contrast to the Enlightenment stress on reason, science-oriented rationalism, and philosophically based dualism of body and soul, the Pietists laid claim to higher criteria of truth based on 'emotive perception' and, in intensified form, 'enthusiasm', that is an 'embodiment or incorporation of spiritual essence in nature', experienced as a 'spiritual rebirth' with impassioned visions of the Holy Spirit working through 'dreams, prophecies, signs and wonders, and speaking in tongues' which to them represented a 'subjective and sensual truth'.¹⁹ According to Geyer-Kordesch,

Stahl's theory takes up main tenets of enthusiast thought, but also claims to be in accord with the latest scientific knowledge. In the symbiosis of Pietist thinking and Stahl's *Theoria Medica Vera* (Halle, 1708) his work was envisioned as an 'advancement of learning', an instauration of knowledge adequate to the new age. The prime difference between the enlightened ideal of pure reason and Stahl's ideas is contained in his holistic theory of the union of body and mind.²⁰

However, Stahl's opposition to, and the Pietists' suspicion of, the new philosophical schools, their dislike of Enlightenment rationalism which sharply separated reason from emotion, belief, and 'enthusiasm', and their antipathy to anything savouring of Deism, Spinozism, and an overly mechanistic conception of nature, led them to combat many strands of the Enlightenment, as is illustrated by their hostility to Cartesianism and bitter campaign against Christian Wolff and his supporters in the 1720s and 1730s.²¹

This anti-intellectual aspect of Pietism explains the rather mixed response they encountered from Christian Thomasius and his followers. While influenced by, and supportive of, many aspects of the Pietist programme, Thomasius was, at the same time,

¹⁸ Geyer-Kordesch, *Pietismus*, 123-4; See also Geyer-Kordesch, 'Deutschsprachige Bücher', 103-5.

¹⁹ Geyer-Kordesch, 'Georg Ernst Stahl's [...] medicine', 78-9; Geyer-Kordesch, 'Passions', 145-50, 156-7, 162.

²⁰ Geyer-Kordesch, 'Passions', 158.

²¹ Israel, *Radical Enlightenment*, 544-52; Hunter, *Rival Enlightenments*, 268-71; Hinrichs, *Preussentum*, 388-441; Gagliardo, *Germany*, 223.

increasingly critical of their de-emphasizing of reason and rejection of philosophy.²² Where Thomasius most obviously converged with the Pietists is in his dislike of the dogmatic and confessional character of traditional academic culture in the Lutheran universities and orthodox attempts to curb Pietist educational and other activity. His theories of the state, civil society, and toleration, were, however, essentially secular in character, involving the separation of religious authority from the ‘civil sciences’, as well as internalizing matters of conscience within the individual; the Thomasian Enlightenment was therefore, in some degree, in conflict with the Pietist drive for the religious reform of society.²³

For all these reasons, the reception of Cartesianism in German society and culture was extremely complex. In 1704, Thomasius remarked on the extensive influence of applications of Cartesian philosophy derived from Holland in having ‘eradicated *scholastische Grillen* in many [German] universities’, particularly false ideas concerning witchcraft and magic.²⁴ In his preface of 1721 to the German translation of John Beaumont’s *Historical, physiological and theological Treatise of Spirits, Apparitions, Witchcrafts and other magical Practices* (London, 1705), he further reflects on the influx of Cartesianism from the Netherlands and its effects in Germany, but, as in 1704, affirms that he is not a Cartesian, explaining the Cartesians had gone too far with their rationalizing and rejection of other paths of thought even while having undeniably overthrown the old ways of thinking.²⁵

Of course, orthodox Lutherans and many Pietists saw nothing good in this, and even strong supporters of Thomasius, like Heumann, were far from enthusiastic about the Dutch intellectual contribution generally. In his *Acta Philosophorum* Heumann denigrates the Dutch as having ‘*ingenia sectaria*, not the best sort of mentality which is evident from the fact that Descartes, who misled people with his eclectic philosophy, has nowhere as many blind followers as in Holland’.²⁶ The term ‘sectarian’ was often used by the eclectics to designate the opposite to their approach.²⁷ Yet, despite such aspersions and

²² Gagliardo, *Germany*, 222-3; Franz Hofmann, ‘Die Universität Halle in der Periode des Verfalls der feudalen Gesellschaftsordnung [...]’, in Hans Hübner (ed.), *Geschichte der Martin-Luther-Universität Halle-Wittenberg, 1502-1977 Abriß* (1977) 37-48, here 42.

²³ Hunter, *Rival Enlightenments*, 6-11, 271; Gierl, *Pietismus*, 422-3; Hinrichs, *Preussentum*, 352-87.

²⁴ Christian Thomasius, *Kurtze Lehr-Sätze von dem Laster Der Zauberey* (1704) 614-15.

²⁵ Ibid., 615; Christian Thomasius, ‘Vorrede’ to Johann Beaumont, *Historisch-Physiologisch-Theologischer Tractaat von Geistern* (1721) 1-92, here 70-1.

²⁶ Heumann, *Acta Philosophorum* (1997 [1723]) part 14, 844.

²⁷ See, for example, Heumann’s discussion of ‘sectarian’ philosophy in *Acta Philosophorum* (1997 [1715]), part 2, 194-8; Gierl, *Pietismus*, 489-90.

a widespread refusal to accept the full philosophical implications and rigor of Descartes' system, many were influenced in some degree by Cartesian ideas.²⁸ The much disputed philosophical origins of Friedrich Hoffmann's iatromechanical system of medicine, for example, besides affinities with Leibniz and Wolff, have been shown to be mainly Cartesian with elements of Thomas Willis, Johannes Bohn and Robert Boyle.²⁹

In the case of Hoffmann, an avowed Eclectic, as well as a moderate and 'enlightened' Pietist averse to the radical 'enthusiastic' side of Pietism,³⁰ Cartesian elements could readily be combined with other influences. Thus, while valuing elements of ancient medicine and the practical guidelines for a rational medicine laid down by Hippocrates³¹ (even calling him the first 'iatromechanic'), and incorporating into his *Medicinae rationalis systematica* (1718-40) the dietetics of Avicenna (980-1037) and some chemical compounds by Paracelsus, he also endorses Helmont's rejection of overly forceful remedies and other sixteenth and seventeenth century medical discoveries and opinions, including, with reservations, Bontekoe's advocacy of warm beverages.³² Galenic-Aristotelian medicine, on the other hand, was for Hoffmann a mere *Filia phantasiae*.³³ He reproaches Galenists for their 'idle speculations' and 'fruitless deliberations' in accordance with Aristotelian philosophy, instead of progressing on the path of experimental science as prescribed by Hippocrates. With their theory of qualities and faculties they had done nothing but halt the progress of science.³⁴ Where Hippocrates remained a 'symbol of effective, open-minded, reality-oriented practice', Galenism, in Hoffmann's time, in Germany as in the Netherlands, increasingly stood for outdated, reactionary medical thinking and practice, even if, both intentionally and unintentionally, still an ubiquitous influence.³⁵

How far, though, did physicians in late seventeenth and early eighteenth century

²⁸ See Paul Hazard, *The European Mind 1680-1715* (1964 [1935]) 157.

²⁹ Ingo Wilhelm Müller, *Iatromechanische Theorie und ärztliche Praxis im Vergleich zur galenischen Medizin - Friedrich Hoffmann, Pieter van Foreest, Jan van Heurne* (1991) 16; Roger French, 'Sickness and the soul: Stahl, Hoffmann and Sauvages on pathology', in Andrew Cunningham and Roger French (eds.), *The Medical Enlightenment of the Eighteenth Century* (1990) 88-110, here 95-8.

³⁰ French, 'Sickness', 89-91, 93-5.

³¹ According to Cook, *Trials*, 67, 'the Hippocratic method fit well with many of the ideas of the new science of the period, and it also supported the intellectual foundation for both the chemical and natural historical work from which so many new discoveries came.'

³² Müller, *Iatromechanische Theorie*, 26-9; See also Albrecht, *Eklektik*, 482-3, and below, chapters V, 185-7, and VI, 201.

³³ Müller, *Iatromechanische Theorie*, 26.

³⁴ *Ibid.*, 24.

³⁵ *Ibid.*, 34, 39-40.

Germany see themselves as ‘enlighteners’? Martin Pott shows that despite differences in theories and approach physicians were a ‘very active group within the Enlightenment movement’.³⁶ The contemporary enlightened ideal of the physician is reflected in Zedler’s definition of ‘Artzt’ [physician], requiring an ‘upright medicus’ to possess high professional and moral standards and conduct, a good knowledge of mathematics and its applicability to medical doctrine. The article typifies the Early Enlightenment’s increased awareness of the Hippocratic roots of western medicine, especially its stress on the close relationship between medicine and philosophy as stipulated by Hippocrates, with ‘alienitas a superstitione’, i.e. estrangement from superstition, deemed the most fundamental quality of a physician for distinguishing well between ‘truth and error’ in the religious sphere, as well as in the choice of methods and scientific judgement, stating that without *Weltweisheit* no virtue can be attained.³⁷ Ending on a note of pessimism, however, Zedler doubts whether medical practice, despite all the schemes for reform, will ever genuinely improve.³⁸ Disapproval in the Zedler article ‘Artzeney-Kunst’ of physicians given to practise without theory, to alchemy and Paracelsian supernatural speculation about ‘astral and tartaric’ causes of illness,³⁹ to ‘magical’ cures with ‘sympathetic powders’ as advocated by Kenelm Digby, as well as diagnosis from ‘mere inspection of the water’, and healing attempts with ‘strange signs, phrases, and bestowing of blessings’, might suggest (as Pott indeed does) a more consistently enlightened view than one actually finds. For while completely rejecting any kind of ‘Zaubercuren’ as ‘mere fantasy and superstition’, ‘justifiable neither before conscience nor worldly court’ and ‘forbidden outright’, the possibility of occult healing effects arising from the use of amulets, sympathetic powders, and other agents is tentatively allowed for and therefore ‘not to be wholly condemned’.⁴⁰

Pott identifies ‘striving for the liberation from superstition’ as the ‘common link between medicine and Enlightenment’.⁴¹ Attempts to redefine illness in the light of the ‘new philosophy’ and Early Enlightenment thought produced conflicting mechanistic and vitalist theories, leading to a split between the so-called *mechanici* and *organici*.⁴²

³⁶ Pott, *Aufklärung*, esp. ch. VI: Der Arzt als Aufklärer: “physikalischer Aberglaube”, 337–412, here 337–8.

³⁷ Ibid., 338–40; Zedler, *Universal-Lexicon* I (1732) entry ‘Arzt’, 1746–8.

³⁸ Zedler, *Universal-Lexicon* I (1732) 1748.

³⁹ On Paracelsus, magic and superstition see Heinz Schott, ‘Magie-Glaube-Aberglaube: Zur “Philosophia Magna” des Paracelsus’, in Heinz Schott and Ilana Zinguer (eds.), *Paracelsus und seine internationale Rezeption in der frühen Neuzeit* (1998) 24–35.

⁴⁰ Zedler, *Universal-Lexicon* I (1732) 1741–46, esp. 1743–4.

⁴¹ Pott, *Aufklärung*, 340.

⁴² Ibid., 340–54, 369–72; Geyer-Kordesch, *Pietismus*, esp. 221–31.

In the case of the mental condition ‘melancholia superstitionis’ (melancholia originating from superstition), for example, Descartes’ mechanistic conception of the body, in which *spiritus animales* constitute the connection between the physiology of the nervous system and perceptions of the soul affecting moral conduct, Harvey’s discovery of the blood circulation as taken up by the Cartesians, and Boerhaave’s purely iatrophysical mechanistic reinterpretation of Galen’s doctrine of the temperaments, contributed, along with other explanations from mechanists like Malebranche and Albinus, as well as the iatrochemist Wedel, to a new understanding of the psycho-pathological character of melancholia.⁴³

Wedel, however, rejected a purely mechanistic explanation of the passions. With recourse to Helmont’s spiritualist-mythical speculations about the ‘immaterial principle of an *anima sensitiva rationalis*’ (a holistic conception of the soul as a ‘centre of bodily and mental activity’), he defined fear and sadness, the main ‘affects’ of melancholic delusion, not as disturbances of the animal spirits in the brain but as ‘passions of the heart, the seat of the human soul’. In his view, any reaction or movement of the animal spirits is initiated by the soul, a concept further developed by his student Stahl into an animist, that is organic theory of life in which the soul functions as a primary ‘regulatory and regenerative power centre’ for psychic and physiological processes maintaining the *oeconomia vitalis*.⁴⁴

In sharp contrast to the mechanists’ purely somatic account of bodily states and illness, Stahl, by arguing for the psycho-somatic, multi-dimensional interrelation of body and soul, sought to restore the physiological attributes of the soul to medicine.⁴⁵ He ‘denies matter as the cause of motion, or as a causal determinant of processes in the body’. In his work, the ‘soul’, ‘a term covering all perceptual processes’, has the ‘capacity to form images, and incite emotion as well as to formulate an idea, and these combined processes effected physiological changes in the body’.⁴⁶ For Stahl, illness does not primarily result from ‘humoural pathology’ or a ‘chemical imbalance’ in the body but, as Roy Porter puts it, is a ‘disturbance of vital functions provoked by misdirected activities of the soul’.⁴⁷ Pathological states such as melancholia, dominated by ‘sadness, fear, anxiety and meanness’, in Stahl’s animist, anti-mechanist interpretation of the

⁴³ Pott, *Aufklärung*, 340-7.

⁴⁴ Ibid., 347-9.

⁴⁵ Geyer-Kordesch, *Pietismus*, 45-51.

⁴⁶ Geyer-Kordesch, ‘Georg Ernst Stahl’s [...] medicine’, 68-71, 76-7; French, ‘Sickness’, 91-2.

⁴⁷ Porter, ‘The Eighteenth Century’, in Conrad et al, *Western Medical Tradition*, 371-475, here 391.

temperaments, closely linking medicine with moral philosophy, are treated psychotherapeutically by urging a better moral consciousness and physically by evacuation (regular blood-letting, diaphoretics, and emetics),⁴⁸ thereby assisting the soul's attempt to 'expel morbid matter and re-establish bodily order'.⁴⁹

Stahlians like Michael Alberti (1682-1757), another former student of Wedel and, from 1715, professor of medicine at Halle, vehemently fought 'superstition' which he counted among the professional duties of a physician. His conception of 'superstition', however, was very different from that of the *mechanici*. As a Pietist, inspired by its religious revivalism and fervently believing in the reconstitution of medicine through Stahl's animism, he aggressively rejected with a string of publications everything opposed to these principles, including all forms of Cartesian mechanism with its, to his mind, reduced and false idea of God, as a modern form of 'superstition'.⁵⁰ According to the Stahlian animists, Cartesian mechanism turned all living creatures into 'soulless machines'.⁵¹ But if, in contrast, the 'organic-teleological' and 'quasi-theological' character of Stahlian animism, closely aligned with Pietism, supposedly 'reintroduced the soul on modernistic terms',⁵² it cannot be denied that it also reasserted the validity of demonology as a factor in health and sickness,⁵³ and potentially led to a strongly mystical tendency, as in the case of Stahl's pupil Johann Samuel Carl (1676-1757), most of whose numerous works are said to be infused with 'mystical-theosophical fantasy'.⁵⁴

In opposition to Stahlian animism without, however, openly breaking with the Stahlians, Friedrich Hoffmann developed his *Medicina rationalis systematica* (1718-40). In broad agreement with Leibniz (from 1699) he sought to overcome the shortcomings he saw in the Stahlian system without losing sight of the contradictions inherent in any purely mechanistic conception of medicine.⁵⁵ Hoffmann's medical-philosophical approach, designed to reconcile his strict mathematical-mechanistic criterion of truth with a rationalistic physico-theological metaphysical framework, precluding both 'superstition' and every atheistic tendency, was further enhanced by his close contacts, over many years, with Leibniz's philosophical heir, Christian Wolff, whose philosophical system

⁴⁸ Pott, *Aufklärung*, 349-53.

⁴⁹ Porter, *Greatest Benefit*, 247; French, 'Sickness', 91-2; See below, ch. VII, 235-8.

⁵⁰ Pott, *Aufklärung*, 357-69.

⁵¹ *Ibid.*, 363.

⁵² Geyer-Kordesch, 'Georg Ernst Stahl's [...] medicine', 76.

⁵³ Pott, *Aufklärung*, 364-9.

⁵⁴ *ADB* III (1876) 782-3. On the 'unity of being' and Carl's objections to the mechanization of medical science, see Geyer-Kordesch, 'Court physicians and State Regulation', 172-5.

⁵⁵ Pott, *Aufklärung*, 369-73.

likewise incorporated a rigorously mechanistic approach to rational thinking, medicine and anatomy.⁵⁶

It has been argued that Stahl's conception of matter as inert, passive and receiving motion from outside was, in fact, not very different from that of the Cartesians, Newtonians and other 'mechanists' of his time. Ku-Ming (Kevin) Chang, in his important contribution to the understanding of Stahl's chemical and medical science, concludes that 'all the elements of Stahl's matter theory' (based on 'indivisible atoms, multi-level composition of corpuscles, and motion'), echoed the mechanical philosophy of his contemporaries', matter for Stahl, like the Cartesians and Newtonians, being purely passive in its reception of motion from outside.⁵⁷

Absolutely passive matter (as the "patient") and an active soul (as the "agent") formed the two pillars of Stahl's dualist vitalism. According to Stahl's postulate, the organic matter that composed the body was liable to constant putrefaction (or, in his language, fermentation), so that this highly fermentable organic body had to rely on a vigilant anima to discharge the corrupt and harmful materials from the vital economy in a timely manner.⁵⁸

Chang established that 'unfortunately, historians have often failed to see this dualism, regarding Stahl as a Helmontian vitalist (or animist) because of his emphasis on an *anima* (much like van Helmont's *archeus* [and, as shown above, his teacher Wedel's 'immaterial principle of an *anima sensitiva rationalis*']) regulating the bio-chemical processes in the body'. Taking into account that for Stahl 'mechanical explanations were not universally applicable', and acknowledging the intervening role of the soul in the 'realm of life', Chang, nevertheless, sees Stahl's vitalism as 'distinct from van Helmont's monist vitalism' in being rather 'a post-Cartesian dualist formulation based upon a conception of passive matter'.⁵⁹ For Friedrich Hoffmann too, being himself a 'mechanist', it seemed that 'the soul in Stahl's doctrines moved the inert matter of the body, and did so not by union but by imposition'.⁶⁰ In contrast to Chang, Geyer-Kordesch found this dualist conception of Stahl's theory to have largely been current ever since,

⁵⁶ Pott, *Aufklärung*, 373-96; See also Geyer-Kordesch, *Pietismus*, 221, 231-42; Geyer-Kordesch, 'Passions', 155-6.

⁵⁷ Ku-Ming (Kevin) Chang, 'Fermentation, Phlogiston and Matter theory: Chemistry and Natural Philosophy in Georg Ernst Stahl's *Zymotechnica Fundamental*', in *Early Science and Medicine* VII, 1 (2002) 31-64, here 50-9.

⁵⁸ *Ibid.*, 63.

⁵⁹ *Ibid.*

⁶⁰ French, 'Sickness', 92, 95-7.

leading her to assert that his ‘autonomous, self-regulating’ organism, based on a holistic indivisible soul-body unity and in contrast to ‘anorganic conformity to natural laws that can be determined chemically and in terms of physics’, has ‘almost always been misunderstood’, including by Leibniz, Albrecht von Haller, Robert Koch and Karl Eduard Rothschuh.⁶¹ During the Early Enlightenment period, these issues were not solely confined to scholarly debate but were brought into the growing public arena by the increased publication of medical books and journals in the vernacular.

ii) The German Language Journals

A well-known and dramatic feature of the Early Enlightenment in Germany was the vigorous increase in German language publishing at many centres, most of all Leipzig, both reflecting and stimulating a corresponding increase – though this was largely confined to the Protestant regions – in the readership for works of theology, philosophy, science, medicine, and many other subjects. Partly, this huge increase was merely a matter of recovery from the profound setback to German culture and society resulting from the Thirty Years War. It was certainly also, however, due to the rising level of literacy, at least in the towns, and the growth in administration, court bureaucracy, and the professions. Geyer-Kordesch has rightly highlighted the increased prominence of medical works in the vernacular in German publishing and the book market from the last two decades of the seventeenth century. This increase, she shows, coincided with the upsurge of mystical, spiritualist and Pietist German works during the last third of the seventeenth century which greatly contributed to a more educated religious consciousness among a lay public becoming more capable of mature judgement and showing more readiness to absorb new concepts and knowledge.⁶² In the same way that in theology, since the Reformation, theologians had more and more been obliged to conduct their published debates in the vernacular rather than Latin, due to growing public demand, so in this period this occurred also in other spheres, including medicine and civil law, professional experts being increasingly drawn to publishing in German.⁶³ By the 1680s, for the first time, the Frankfurt and Leipzig book sale catalogues show German

⁶¹ Geyer-Kordesch, *Pietismus*, 4, 41, 50-1, 259.

⁶² Geyer-Kordesch, ‘Deutschsprachige Bücher’, 93-108.

⁶³ Geyer-Kordesch, ‘Deutschsprachige Bücher’, 94-5; Gierl, *Pietismus*, 380-95; Hunter, *Rival Enlightenments*, 6-7, 11.

publications surpassing those in Latin in several years. From 1690, German language publications remained invariably dominant and by 1714, for the first time, doubly exceeded those in Latin, and included numerous *Fachschriften*.⁶⁴

Thomasius not only established a new teaching trend in German universities when, in 1687, he followed the earlier example of the mathematician and astronomer Erhard Weigel (1625-99) at Jena who preceded him in lecturing in German instead of Latin;⁶⁵ in January 1688, he launched the first German language journal *Monats-Gespräche*, which appeared monthly and was entirely written and edited by himself. At the launch of the *Monats-Gespräche*, the best known journals in Germany were the *Journal des S[ç]avans* (Paris 1665), the *Acta Eruditorum* (Leipzig, 1682), Pierre Bayle's French-language periodical *Nouvelles de la République des Lettres* (Amsterdam, 1684-8) and Jean le Clerc's *La Bibliothèque Universelle* (Amsterdam 1686-93).⁶⁶ These introduced and reviewed new publications in the fields of natural sciences, anatomy, and astronomy, as well as theology, philosophy, research reports and obituaries of deceased scholars. In England, the Royal Society was the first regularly to publicize their scientific work in the *Philosophical Transactions* in English (London, 1665) while in Germany the earliest scientific journal appeared in Latin. These were the *Miscellanea curiosa medico-physica*, also called *Ephemerides Naturae Curiosae*, published from 1670, by the scientific society *Academia Naturae Curiosorum* (later named *Academia Caesareo-Leopoldina*) founded, in 1652, by the physician Johann Lorenz Bausch (1605-65) in Schweinfurt, and the *Acta Eruditorum*, edited and published by Otto Mencke (1644-1707), soon to become the leading scholarly journal of central Europe and leading Latin journal for the whole of Europe.⁶⁷

These erudite periodicals, reporting scholarly debates, new books and theories within a broad European context, evolved into a 'powerful machinery of the Early Enlightenment, undermining traditional structures of authority, knowledge, and

⁶⁴ Johann Goldfriedrich, *Geschichte des Deutschen Buchhandels vom Westfälischen Frieden bis zum Beginn der klassischen Litteraturperiode* (1648-1740) 3 vols. (1908-13) 26, 80-1.

⁶⁵ Albrecht, *Eklektik*, 309; Geyer-Kordesch, 'German medical education', 179; Geyer-Kordesch, *Pietismus*, 124.

⁶⁶ Christian Thomasius, *Freymüthige, Lustige und Ernsthaffte, jedoch Vernunfft- und Gesetz-Mässige Gedancken, Oder Monats-Gespräche, über allerhand, fürnehmlich aber Neue Bücher, Durch alle zwölf Monate des 1688 und 1689 Jahres* (Halle, 1690) here February 1688, 224.

⁶⁷ Joachim Kirchner, *Das deutsche Zeitschriftenwesen, seine Geschichte und seine Probleme*, 2 vols., I: (1942) 21-9; Otto Dann, 'Vom Journal des Scavants zur wissenschaftlichen Zeitschrift', in Bernhard Fabian and Paul Raabe, *Gelehrte Bücher vom Humanismus bis zur Gegenwart* (1983) IX, 63-80; A. H. Laeven, *De 'Acta Eruditorum' onder redactie van Otto Mencke, De geschiedenis van een internationaal geleerdenperiodiek tussen 1682 en 1707* (1986) esp. 1-65.

doctrine'.⁶⁸ Thomasius, however, was the first to address the whole German reading public beyond the academic milieu in their own language from a non-theological standpoint. In the first issue of the *Monats-Gespräche*, he stresses the 'indisputable usefulness' of book news and extracts in the vernacular, allowing 'easy grasp of their content and essence with little loss of time and without great expense',⁶⁹ while at the same time 'entertaining human curiosity which always desires to learn something new in a genuine fashion'.⁷⁰ Committed to far-reaching reform in various areas of society, including the legal, academic and (with reservations) medical professions, Thomasius endeavoured to impart not just information about new books and learning but knowledge, insight and reasoning applicable to everyday life in a 'humorous', 'serious', 'sensible', 'simple', 'amusing', 'useful', 'candid', 'rational', 'legitimate' way, as indicated in the journal's varying titles. This sets the *Monats-Gespräche* apart from other learned journals. Whereas the latter remained largely neutral in their judgement, Thomasius instructs, discusses and reflects in satirical dialogue form relevant to a wide social context.⁷¹

Scholars have expressed surprise that Thomasius, 'in his reform proposals, excluded the methods and results of the "new science"'. Friedrich Vollhardt concludes that for Thomasius 'modern experimental science (at least during the initial phases of his publicizing activities) does not present an alternative to Aristotelian natural philosophy but, on the contrary, falls victim to the same verdict'.⁷² Thomasius doubted the practical use of scientific inventions like new instruments, if they 'serve no purpose other than embellishing gentlemen's Curiosity Chambers'.⁷³ Natural scientists, such as Van Leeuwenhoek, were as 'irrational' as the Aristotelians if they justified their obvious 'nonsense' with references to 'occult powers hidden in nature'.⁷⁴ Thomasius's expedience- and practice-oriented concept of science, based on 'healthy reasoning', had to be accessible and applicable within a broader social context.⁷⁵

⁶⁸ Israel, *Radical Enlightenment*, 142.

⁶⁹ The cost of the *Monats-Gespräche* was two Groschen. See Alexander Nicoladoni, *Christian Thomasius, Ein Beitrag zur Geschichte der Aufklärung* (1888) 31.

⁷⁰ Thomasius, *Monats-Gespräche* (1690) Feb. 1688, 223-4.

⁷¹ Herbert Jaumann, 'Bücher und Fragen: Zur Genrespezifik der Monatsgespräche', in Friedrich Vollhardt (ed.) *Christian Thomasius (1655-1728), Neue Forschungen im Kontext der Frühaufklärung* (1997) 395-404, here 400-3.

⁷² Friedrich Vollhardt, "'Die Finsterniß ist nunmehr vorbei"', *Begründung und Selbstverständnis der Aufklärung im Werk von Christian Thomasius*, in Vollhardt (ed.) *Christian Thomasius*, 3-13, here 8.

⁷³ *Ibid.*, 9.

⁷⁴ *Ibid.*, 8.

⁷⁵ *Ibid.* 11-12.

The *Monats-Gespräche* (1688-90), filling nearly 3000 printed pages, declared war on superstition and prejudice, pedantry, old-fashioned scholarship, rigid orthodoxy and intolerance among scholars, theologians, and philosophers, ensuring Thomasius a large readership despite continually antagonizing the orthodox Lutheran clergy who severely criticized his approach and philosophical outlook.⁷⁶ According to Heumann, a firm supporter of the Thomasian Enlightenment, ‘what Luther did for the reformation of theology, Thomasius did to almost equal measure for the reformation of philosophy’ by ‘attacking established errors and pedantries with the greatest vigour, fighting Aristotelian as well as Cartesian prejudices, and bringing Logic, Ethics, and Natural Justice to a wholly new and beautiful state’.⁷⁷ Had it not been for Thomasius and his ‘*ingenio primae magnitudinis*’, Heumann asserts, ‘we might still lie under the yoke of the old philosophy’. Through his writings many eyes had been opened, and even if some objected to them, Thomasius had to be regarded as a ‘*Lumen mundi philosophici*’ whose ideas should be carefully examined.⁷⁸ Zedler, while reporting severe criticisms of Thomasius, also acknowledges his status as a philosophical reformer who ‘greatly contributed to the betterment of the philosophical sciences, and deserves thanks for publicly daring with astonishing courage and considerable trouble and risk to himself, to free the Germans from the sectarian yoke in philosophy and establish eclectic freedom to philosophize’.⁷⁹

The critical eclectic philosophy advocated by Thomasius and his followers was highly conducive to a ‘culture of impartiality, balance and toleration’⁸⁰ and a willingness to see that fragments of truth can be found everywhere, inspiring the new German language journals which proliferated from the late 1680s onward. Their purpose, as described in a general index of the most important German journals and weekly papers published throughout the eighteenth century, was

in a commodious yet reliable way to enlarge the sum of human knowledge and to spread it among all classes, to circulate generally useful and important truths supported by new evidence, cast light on every aspect of the sciences, eliminate errors, fight against prejudice, bring about a universal enlightenment of the mind,

⁷⁶ Kirchner, *Deutsche Zeitschriftenwesen*, 30-6; Laeven, *De ‘Acta Eruditorum’*, 20-1; Nicoladoni, *Christian Thomasius*, 31-5; Zedler, *Universal-Lexicon* XLIII (1745) 1580-601, here 1589.

⁷⁷ Heumann, *Acta Philosophorum* (1997 [1716]) part 4, 609.

⁷⁸ Ibid., 609-10.

⁷⁹ Zedler, *Universal-Lexicon* XLIII (1745) 1580-601, here 1588-9.

⁸⁰ Israel, *Radical Enlightenment*, 151.

ennoblement of beliefs and conduct, and in general endeavour to make their fellow men more content, wiser and happier.⁸¹

By 1700, fifty-eight journals had been launched in Germany, by 1720 another 183 were on the market, though many were short-lived.⁸²

Table 1: Production of German periodicals in the eighteenth century

1701-10	1711-20	1721-30	1731-40	1741-50	1751-60	1761-70	1771-80	1781-90	Total
64	119	133	176	260	331	410	718	1225	3494

Source: Kirchner, *Grundlagen*, 323.

In the years up to 1750, the great majority of periodicals were published in Protestant northern and central Germany. Of the 34 leading publishing centres, Leipzig, with 174 periodicals, Frankfurt a. M. (75), Hamburg (74), Berlin (42), Halle (40) and Jena (30) were the most prolific. In the southern German speaking area, only the predominantly Protestant cities of Nuremberg (27), Zürich (25), and Augsburg (14)⁸³ produced a significant number of scientific and popular journals.⁸⁴ Kirchner defines the printed ‘New High German’ as a ‘Protestant dialect’ and its cultivation in science and everyday life as an ‘act of Protestant spirit’, as most evident from the proliferation of periodicals in the eighteenth century - whereas Protestant cities were receptive to their scientific and educational, as well as entertainment value, towns and countries mainly under Catholic rule neglected, or even rejected, this new form of publication.⁸⁵

The *Deutsche Acta Eruditorum* (Leipzig, 1712-39), a German version but not a translation of the famous Latin journal, commented in its first issue that the so-called journals in the vernacular had increased to ‘such an extent that one can hardly take note of them all’.⁸⁶ German periodicals were also to be found in those areas that were in intellectual and cultural contact with Protestant Germany, such as Amsterdam, Dorpat

⁸¹ J. H. Chr. Beutler and J. Chr. Gutschmidt, *Allgemeines Sachregister über die wichtigsten deutschen Zeit und Wochenschriften* (1790) 2.

⁸² Joachim Kirchner, *Die Grundlagen des Deutschen Zeitschriftenwesens, Mit einer Gesamtbibliographie der deutschen Zeitschriften bis zum Jahre 1790* (1928) 323.

⁸³ Augsburg was confessionally mixed, if ‘quite predominantly’ Lutheran. See Bernd Roeck, ‘Health care and Poverty Relief in Counter-Reformation Catholic Germany’, in Ole Grell, Andrew Cunningham, Jon Arrizabalaga, *Health Care and Poor Relief in Counter-Reformation Europe* (1999) 280-303, here 283, 291.

⁸⁴ Kirchner, *Grundlagen*, 329; Goldfriedrich, *Geschichte* II, 81-6.

⁸⁵ Kirchner, *Grundlagen*, 330.

⁸⁶ *Deutsche Acta Eruditorum, Oder Geschichte der Gelehrten, Welche den gegenwärtigen Zustand der Literatur in Europa begreifen*, 20 vols. (1712-39) here 1712, Preface by I. Andreae.

[now Tartu], Copenhagen, Danzig, Libau [Liepaja], Mitau [Jelgava], Petersburg, Reval [Tallinn], Riga, Stockholm.⁸⁷ Aimed at the educated lay public and read by the professional classes, they resulted in recent foreign books becoming more widely as well as more rapidly known and discussed. At the end of the century, Johann Daniel Metzger (1739-1805), Royal physician and, since 1777, professor of anatomy, physiology, pathology and surgery at Königsberg, refers to the 'legion' of journals as a 'great aid to the spread of learning', citing the *Nouvelles découvertes sur toutes les parties de la médecine* (1679-81), the first medical journal in French, by Nicolas de Blégnny (1652-1722),⁸⁸ and Blankaart's *Collectanea Medico-Physica*.⁸⁹ By 1800, the acclaimed Hamburg physician Johann Jacob Rambach (1772-1812) attributed the 'higher level of enlightenment' and 'rational trust in medicine' among the more educated, like their undergoing immunization against small pox,⁹⁰ to the 'excellent' and much read weekly 'Der Arzt' of the Altona physician Johann August Unzer (1727-99),⁹¹ published between 1759-64 with subsequent frequent reprints, and reissued in revised and form by subscription in six bound volumes in 1769 and 1771.⁹² In view of the remarkable proliferation of journals in Germany after 1700, it seems surprising that a fairly recent work on *State, Society, and University in Germany 1700-1914* should refer to a lack of 'specialized' and 'convenient national journals' which 'inhibited publication' and made scientific enquiry a 'more laborious and isolated activity'.⁹³

In 1712, the *Deutsche Acta Eruditorum*, one of the most widely read new journals, remarked on the change in intellectual climate from the formerly strict refusal of universities to 'accord a place to the new philosophy, mainly because Aristotelianism

⁸⁷ Kirchner, *Grundlagen*, 331.

⁸⁸ Brockliss and Jones, *Medical World*, 624-5.

⁸⁹ Johann Daniel Metzger, *Skizze einer pragmatischen Literaturgeschichte der Medizin* (1792) 292-3.

⁹⁰ See also Lindemann, *Health and Healing*, 138, 373.

⁹¹ Johann Jacob Rambach, *Versuch einer physisch-medizinischen Beschreibung von Hamburg* (1801) 340, 379-80.

⁹² Beutler and Gutsmuth, *Allgemeines Sachregister*, 8, confirm the 'extraordinary' popularity of *Der Arzt* (modelled on the English 'moral weeklies'), published in Hamburg, Lüneburg, and Leipzig, and translated into Dutch, Danish, and Swedish. Francisca Loetz, in 'Leserbriefe als Medium ärztlicher Aufklärungsbemühungen: Johann August Unzers "Der Arzt. Eine medicinische Wochenschrift" als Beispiel', in *Medizin, Gesellschaft und Geschichte* VII (1988) 189-204, here 191-3, offers a social analysis of 1047 subscribers for 1769, vividly illustrating the primacy of jurists and government officials (353), clergy (171), physicians, surgeons and apothecaries (157) and the concentration of the readership in Saxony, Brandenburg, Hanover and other parts of northern Germany.

⁹³ Charles E. McClelland, *State, Society, and University in Germany 1700-1914* (1980) 85.

and Scholasticism were the fashion throughout', to a milieu in which 'all useful sciences are, more or less, practised now, though each after his own fashion and not all at the same pace'.⁹⁴ By 1740, Zedler's *Universal-Lexicon* states that the high repute of Aristotle, the long revered 'philosophical idol', and his untenable ideas on 'physick', had in more recent times, 'greatly declined, especially since the rise of Cartesius and Gassendus' (i.e. Pierre Gassendi).⁹⁵ But in contrast to the Netherlands, Switzerland and Sweden, the German scientific-philosophical arena long remained fragmented and rather confused with the Thomasian Eclectics, the Leibnizio-Wolffians and Cartesians all rivalling each other.⁹⁶ Metzger claims, 'Cartesian philosophy did not retain its grudgingly granted standing for very long' and that its principles were contested and overthrown by powerful opponents, especially, he says, from England (citing Locke and Newton) and Germany (giving no names).⁹⁷

Despite the wealth of new journals and learned periodicals, compared to philosophical, theological historical-political themes, new medical works and debates initially received only moderate attention. It is therefore significant that among the very few medical authors discussed in the *Monats-Gespräche* and in the German language periodical *Monatliche Unterredungen einiger guten Freunde* (Leipzig, 1689-98), initiated by Wilhelm Ernst Tentzel (1659-1707), electoral Saxon councillor and historiographer in Dresden, are Bontekoe, Overkamp, Gehema and Blankaart. Shortly after launching his *Monatsgespräche*, Thomasius was still undecided about the role of medicine in popular literature, professing his indecision 'whether to side with Galen, Hippocrates, Theophrasto [Paracelsus] or with one of the new-fashioned *neoterici* [innovators]'.⁹⁸ By December 1689 he had come to the conclusion that among the Aristotelians, Galenists, Chemists, and Cartesians, some were mere theoreticians, others relied only on practice, and again others subordinated theory to practice, of which he favoured the latter - medical writers like Bontekoe, Gehema, and Overkamp - who, next to anatomy, 'base their science on the *Physicam Cartesianam* (though somewhat moderately and *cum libertate eclectica*)'. Instead of curing illness with many irksome and disagreeable remedies, they endeavoured to 'investigate the structure of the human body, the main principles of its health and the cause of all illness, and instruct sensible people how, by

⁹⁴ *Deutsche Acta Eruditorum* (1712) Preface.

⁹⁵ Zedler, *Universal-Lexicon* III (1740) 'Natur-Lehre', 1147-67, here 1159.

⁹⁶ See Israel, *Radical Enlightenment*, 541-62.

⁹⁷ Metzger, *Skizze*, 292.

⁹⁸ Thomasius, *Monats-Gespräche*, March 1688, 267.

way of a moderate and diaetetic lifestyle, health can be maintained or attained to a more perfect degree'.⁹⁹ In the same spirit, the *Monatliche Unterredungen* recommend, 'above all things', Gehema's *Beste Zeitvertreib* (Bremen, 1689), which 'consists of man attaining self-knowledge, that is understanding, to some extent, the difference between body and mind which constitute an artful human machine, and the divine design as to how these two are interconnected'.¹⁰⁰

In Heumann's *Acta Philosophorum*, geared towards the discussion of the history of philosophy, health-related issues feature only in relation to their conduciveness to the philosophical mind. According to notable authors, the *ingenia* of the Germans, Dutch, English, French, Spanish, Italians, Greeks, Russians, Swedish, Danes, Poles, for example, differed markedly depending on the climate and diet of their countries - a warm, pure and subtle atmosphere, light food and drink being more conducive to producing good *ingenia* than cold, impure or rough air and a coarse menu. Adequate fluidity of the blood was seen as a requisite for yielding the right *spiritus*, and water and tea, rather than blood-heating wine and sluggish-making beer, were judged most suitable for philosophizing. Cited as authoritative sources are the 'famous' Bontekoe's chapter on tea and its powerful effect on the brain in his *Kurtze Abhandlung*, Thomasius's views on tea in his *Monats-Gespräche*, and Bontekoe's opinion on tobacco as a means of promoting 'deep contemplation, the exploration of truths and investigation of virtue and of the sciences'.¹⁰¹

By contrast, in the Latin *Acta Eruditorum* the category *Medica et Physica*, including mathematics, comprised a large proportion of the combined quantity of reviews and articles between 1682 and 1707, namely 29.5%. If one just considers reviews without mathematics, the relevant figure was 15.9%, apparently for some critics not high enough. In 1684, for example, Mencke stated in a letter to the prominent court official, political writer, and (with 235 reviews) second most prolific reviewer of the *Acta Eruditorum*, Veit Ludwig Freiherr von Seckendorf (1626-92), that he intended to devote much of the 1684 February issue to medicine and physics in response to the criticism of those who considered the attention thus far given to these fields insufficient.¹⁰²

The widely read *Acta Eruditorum* and the *Journal des Savans* (published in Paris

⁹⁹ Thomasius, *Monats-Gespräche*, Dec. 1689, 1042; See also below, ch. IV, 141-3.

¹⁰⁰ [periodica] *Monatliche Unterredungen*, May 1689, 583.

¹⁰¹ Heumann, *Acta Philosophorum*, (1997 [1716]) part 4, 638-69.

¹⁰² Laeven, *De 'Acta Eruditorum'*, 46-7, 123.

and Amsterdam) both reported on Bontekoe's *Fundamenta Medica* (1688)¹⁰³ and reviewed his *Metaphysica, et [...] Oeconomia animalis, Opera posthuma* (1688).¹⁰⁴ About the *Metaphysica* the French journal comments that it 'describes and summarizes Descartes' metaphysics so well that one cannot help but admire the genius of the present author', but it also notes his divergence from Descartes in his ideas on movement and fermentation, and as regards the pineal gland, and his closeness to Geulincx.¹⁰⁵ The *Journal des Savans* also reviewed the French version of Bontekoe's *Korte Verhandeling* (1684) under the title *Nouveaux Eléments de Médecine*, translated by the Parisian master surgeon Devaux (Paris, 1698),¹⁰⁶ the French version of Blankaart's *Anthropologia Nova: or A new System of Anatomy* [*Nouveau Systeme d'Anatomie*] (London, 1707) and his *Anatomia reformata* [*Anatomie reformée*] (1708), both translated by the English physician 'Jacques' Drake.¹⁰⁷

The *Acta Eruditorum* discussed Bontekoe's fever treatise *Diatriba De Febris* (1683)¹⁰⁸ and the *Fragmenta* (1683),¹⁰⁹ Blankaart's *Kartesiaanse Academie* (1683),¹¹⁰ his *Nauwkeurige verhandelinge van de scheurbuik* (1684),¹¹¹ *De nieuw hervormde anatomia* (1686 edn.),¹¹² the *Schouw-Burg der Rupsen* (1688),¹¹³ the *Anatomia Reformata* (1695),¹¹⁴ the *Opera Medica Theoretica, Practica et Chirurgica* (1701),¹¹⁵ and the 1702 edition of his *Lexicon Novum Medicum Graeco-Latinum*.¹¹⁶ Several times the *Acta Eruditorum* also reviewed the much read *Praxis Chirurgica Rationalis* by Muys, published in several parts,¹¹⁷ as well as his *Podalirius redivivus* (1686).¹¹⁸ In most cases, reviewers describe the book's content but remain neutral in their judgement. Although in the early years periodical contributors mostly remained anonymous,¹¹⁹ it is known

¹⁰³ *AE* XI, Nov. 1688, 616-17; *JdS* (Paris) XXIV, 15 Nov. 1688, 319.

¹⁰⁴ *AE*, IX, Sept. 1688, 487-90; *JdS* (Paris) XXI, 18 Oct. 1688, 272-5.

¹⁰⁵ *JdS* (Paris) XXI, 18 Oct. 1688, 273-4.

¹⁰⁶ *Ibid.*, XLI, 7 Dec. 1699, 487-92.

¹⁰⁷ *JdS* (Paris) XXXIII, 13 Aug. 1708, 253-61.

¹⁰⁸ *AE* VIII, 354-5.

¹⁰⁹ *Ibid.*, 355-7.

¹¹⁰ *Ibid.*, IV, April 1685, 144-6.

¹¹¹ *Ibid.*, X, Oct. 1685, 456-60.

¹¹² *Ibid.*, III, March 1687, 162-5.

¹¹³ *Ibid.*, I, Jan. 1690, 55-6.

¹¹⁴ *Ibid.*, VIII, Aug. 1695, 389-90.

¹¹⁵ *Ibid.*, V, Mai 1702, 193-5.

¹¹⁶ *Ibid.*, VII, July 1702, 294-6; See also *JdS* (Paris) XXXIII, 13 Aug. 1708, 252.

¹¹⁷ *AE* V, May 1685, 227-8; *AE* VII, July 1687, 396-8; *AE* VII, July 1690, 355-8.

¹¹⁸ *AE* VII, July 1687, 399-400; See also *JdS* (Paris) XXVII, 25 Nov. 1686, 278.

¹¹⁹ Kirchner, *Deutsche Zeitschriftenwesen*, 28-9.

that eminent medical scholars and physicians like Ettmüller, Bohn, and Wedel, besides Ortlob, Johann Wilhelm Pauli (1658-1723), and Christian Johann Lange (1655-1701), regularly supplied these reviews.¹²⁰

The Dutch-language journal *Boekzaal van Europe* (Rotterdam, 1692-1702),¹²¹ founded and edited by the liberal Anabaptist, lawyer and teacher Pieter Rabus (1660-1702), cannot be ignored in this present context, as it was widely read in Protestant Germany and the Baltic and often survives in older German libraries. Rabus, as a representative of the Early Enlightenment, was, like Thomasius, stimulated by the conviction that ‘truth should never be the sole possession of a small elite’ and fought an ‘enlightened’ campaign against superstition and prejudice.¹²² Rabus’s standpoint may have been all the more acceptable in Germany in that he combined reformism and anti-Aristotelianism with a dislike of philosophical abstraction and a fervent hostility to Spinozism. While enthusiastic about new science and scholarship, unlike many Dutch contemporaries, he rejected Descartes’ physical world-picture as outdated.¹²³

The *Boekzaal* offers an excellent cross-section of the scientific endeavours and intellectual activities in Europe. Medical works form a small proportion of the 1,026 books Rabus discusses. Only fifty are reviewed. Rabus was well acquainted with the medical literature of his time but, writing for a broad general audience, he imposed restrictions on himself.¹²⁴ Not given to sensationalism, that is reporting on monstrosities and other *curiosa* as Blankaart was prone to in his *Collectanea* despite his demand for scientific objectivity, Rabus adhered to a middle path of common sense and eclectic independence.¹²⁵ Rabus’s attitude to Cartesian medicine was ‘more one of acknowledgement than judgement’. Among the schools of medical thought, he maintained a ‘hesitant balance’ between the iatrochemical (Le Bœ Sylvius) and mechanical schools (Craanen), both products of the application of Cartesian ideas to medicine.¹²⁶ Although Rabus rejected orthodox Cartesianism, the critical reforming approach of Cartesian rationalism appealed to him. Thus he recommends Overkamp’s *Alle de [...] Werken* (1694) to anyone ‘not revolted by Cartesianism’ because the

¹²⁰ Laeven, *De ‘Acta Eruditorum’*, Appendix, review and contributor lists.

¹²¹ The *Boekzaal van Europe* (57 volumes), was renamed, in 1692, *Tweemaandelijke Uittreksels*, and, after 1702, *Boekzael der Geleerde Werelt*.

¹²² J. J. V. M. De Vet, *Pieter Rabus (1660-1702) Een Wegbereider van de Noordnederlandse Verlichting* (1980) 447.

¹²³ *Ibid.*, 448.

¹²⁴ Habernickel, Slenders and Kerkhoff, ‘Rabus en de Geneeskunde’, 325.

¹²⁵ *Ibid.*, 326.

¹²⁶ De Vet, *Pieter Rabus*, 171.

Cartesian propositions are concisely explained and ‘defended tooth and nail’ [hand en tand]¹²⁷ As an editor, Rabus seemed generally more concerned with the practical aspects of medicine such as cures for fevers and gout, and self-help remedies.¹²⁸ Of Blankaart’s works he reviewed only *Den Nederlandschen Herbarius* (1698),¹²⁹ and announces the third (1696) edition of his *De nieuw hervormde anatomia*¹³⁰ and the *Opera Medica, Theoretica, Practica et Chirurgica* (1701).¹³¹ None of Bontekoe’s medical books are discussed but Rabus’s remarks about Bontekoe in other contexts reflect his appreciation of the ‘tea-doctor’.¹³² A fulsome poem by him, included in Bontekoe’s posthumously published collected works, affirms that truth, even if ignored by contemporaries, will eventually assert itself over ignorance. Rabus commends the ‘far-sighted’ Bontekoe who ‘put medicine on sound foundations’, one of whose works, he says, is ‘worth a hundred others’, and the ‘great Descartes’ for freeing the mind of prejudice.¹³³

It has been claimed that the medical books reviewed by Rabus ‘do not throw a new light on either the theoretical or practical medicine of the late seventeenth century’ and that the authors he mentions, though helping determine the face of medicine at the time, have not been of great significance in the history of medicine.¹³⁴ This view would seem to require modification. Dismissing the medical writings discussed in the *Boekzaal* as mostly ‘mediocre and lacking in originality’¹³⁵ because the authors discussed do not correspond to the established canon of supposedly major writers appears to impose a twentieth century framework in a way that distorts the seventeenth century perspective. Several authors, including Drélincourt, Leeuwenhoek, Joannes Munniks, Bidloo, and Hendrik van Deventer were leading figures in science and medicine in the Netherlands. Nor do the influential German medical authorities Wedel and Schelhammer belong

¹²⁷ Rabus (ed.), *Boekzaal*, Nov./Dec. 1694, part 4, 433-43, here 434, 441-2 ; Habernickel et al, ‘Rabus’, 332-3.

¹²⁸ Habernickel et al, ‘Rabus’, 327-9.

¹²⁹ Wrongly cited in Habernickel et al, ‘Rabus’, 336, as *De Nederduitse herbarius*; *Boekzaal*, Nov./Dec. 1697, part 4, 444-54.

¹³⁰ Rabus (ed.), *Boekzaal*, Nov./Dec. 1695, part 21, 552.

¹³¹ Rabus (ed.), *Boekzaal*, Nov./Dec. 1700, part 15, 553.

¹³² Habernickel et al, ‘Rabus’, 333.

¹³³ Pieter Rabus, ‘Op de nagelaten Werken Van den doorluchtigen Geneesheer Cornelis Bontekoe’, in Bontekoe, *Werken* (1689) I.

¹³⁴ Habernickel et al, ‘Rabus’, 329-30; A similar point is made by Michiel Wielema about contemporary philosophers in Van Bunge et al, *Dictionary [...] Dutch Philosophers*, 115-18, here 116-17, stating that the pages of the *Boekzaal* are ‘crowded by mostly mediocre thinkers who are all but forgotten, while developments that are now considered important [...] are hardly if at all reflected in the choice of books for discussion’.

¹³⁵ Habernickel et al, ‘Rabus’, 323.

among those whose names are written in ‘small letters’ in the history of medicine,¹³⁶ given their prominence in contemporary German medical discussion.

In answer to the perceived ‘lack of German medical works in book-fair catalogues, journals and learned papers, especially those capable of bestowing obvious benefit or distinction on medicine’, a number of Breslau physicians launched the medical periodical *Sammlung von Natur-und Medicin-, Wie auch hierzu Behörigen Kunst- und Literatur-Geschichten* (1717-26) in Breslau, Leipzig, Budissin, and Erfurt, also known as *Breslauer Sammlungen*,¹³⁷ which was received with ‘general applause, also by foreigners’.¹³⁸ Among the German and Dutch medical works cited and briefly discussed are cures of gout with the newly fashionable Chinese herb Moxa by Gehema and the East India Company physician Wilhelm ten Rhyne at Batavia,¹³⁹ Blankaart’s ‘milk cure’,¹⁴⁰ Bontekoe’s tea treatise,¹⁴¹ and the views of some German physicians on tea.¹⁴² New experiments in growing so-called Indian tea on Hungarian and Silesian soil, and the difficulties of growing tea from seed, in which German physicians like Christian Mentzel (1622-1701) had taken an active interest,¹⁴³ the flowering of coffee trees in July 1723 in Leipzig,¹⁴⁴ and in September 1723 and 1724 in Sachsen-Meinungen, were a matter of great interest to many, as was the spreading cultivation of tobacco in Europe, reportedly particularly successful in Norway.¹⁴⁵

The *Neue Zeitungen von Gelehrten Sachen* (Leipzig, 1715-32), edited by Johann Gottlieb Krause (1648-1736), since 1723 professor of rhetoric at Leipzig university, one of the most prominent and widely read journals,¹⁴⁶ published information about works discussed in other German and foreign journals, including the Latin *Acta Eruditorum*, the Dutch *Het Republyk der Geleerden, Maandelyke Uittreksels, of Boekzael der Geleerde Werelt*, the French *Journal des Savans*, the *Giornale de Letterati d’ Italia*, and

¹³⁶ Habernickel et al, ‘Rabus’, 330.

¹³⁷ *Sammlung von Natur-und Medicin*, March 1718, 858.

¹³⁸ Zedler, *Universal-Lexicon* XXIII (1740) 1168.

¹³⁹ J. A. Gehema, *Eroberte Gicht durch die Chinesische Waffen der Moxa* (Bremen, 1683); W. ten Rhyne, *Curieuse Beschreibung, Wie die Chinesen und Japaner vermittelst des Moxa-Brennens und guldenen Nadel-Stechens alle Kranckheiten, insonderheit aber das Podagra gewiß curiren*, in Blankaart, *Accurate Abhandlung von dem Podagra und der Lauffenden Gicht*, 2nd edn. (Leipzig, 1992).

¹⁴⁰ *Sammlung von Natur-und Medicin*, Jan. 1718, 719.

¹⁴¹ *Sammlung von Natur-und Medicin*, December 1717, 450; See below, ch. VI, 189-91, 202.

¹⁴² *Sammlung von Natur-und Medicin*, March 1718, 1109; May 1719, 622.

¹⁴³ *Sammlung von Natur-und Medicin*, Dec. 1717, 444-9; See also *Monatliche Unterredungen*, Oct. 1690, 899.

¹⁴⁴ *Sammlung von Natur-und Medicin*, Dec. 1717, 85.

¹⁴⁵ *Sammlung von Natur-und Medicin*, Jan. 1726, 123.

¹⁴⁶ Goldfriedrich, *Geschichte* II, 58.

the English *Philosophical Transactions*.¹⁴⁷ This journal may be taken to reflect the very different perspective that applied by around 1720. As far as Dutch medical influences are concerned the scene is now heavily dominated by Boerhaave and Ruysch. Boerhaave, celebrated in Germany, as elsewhere, for his outstanding contributions to the ‘theory and practice of medicine, chemistry, botany, anatomy, as well as his great learning, excellent writing skills, penetrating judgement and astuteness’, is credited here with restoring a balance between modernity and ancient Greek medicine which allegedly, along with Italian and French medical writing, had previously been ‘thrown under the bench’.¹⁴⁸ However, the previous generation was not entirely forgotten and the debate about tea in particular, in which Bontekoe had played such a central role, continued to be of interest. Thus, for example, in 1722, the *Neue Zeitungen* reports on a letter written by Bontekoe to ‘Conerdingen’ and published in the Berlin medical journal *Acta Medicorum Berolinensium* VI (1722), in which he maintained that tea was ‘not only useful but could be taken daily without the slightest danger’.¹⁴⁹

Even if medical periodicals as such remained comparatively rare during the early eighteenth century, the book reviews in the more prominent journals did contribute, *inter alia*, to spreading awareness of the Dutch Cartesian medical writers’ reform campaign, addressed not only to the learned medical profession but also the wider public. According to a Latin periodical, published at Rostock in 1721, it was the French and Dutch who pioneered the learned journal as such, but the ‘Germans who established the vernacular review addressing a wider, essentially national audience’.¹⁵⁰ This little noted but important fact appears to apply to the whole eighteenth century with Germany producing considerably more vernacular journals than the other main European countries.¹⁵¹

¹⁴⁷ Kirchner, *Deutsche Zeitschriftenwesen*, I, 39–40.

¹⁴⁸ Johann Gottlieb Krause (ed.), *Neue Zeitungen von Gelehrten Sachen, Oder Gesammlete Nachrichten von allem, was dieses Jahr über in der gelehrten Welt Ruhm- und merckwürdiges vorgefallen*, 19 Aug. 1723, 645–6.

¹⁴⁹ *Neue Zeitungen*, 1 Oct. 1722, 766–7.

¹⁵⁰ Israel, *Radical Enlightenment*, 143.

¹⁵¹ The English periodicals listed in the British Library, for example, appearing up to 1790, amount to 846, which is approximately only a quarter of the comparable figure for Germany. See Kirchner, *Grundlagen*, 323.

iii) Private Libraries, Encyclopaedias and Lexicons

Numerous auction and book-sale catalogues and catalogues of *ex-libris* collections of the time between 1680 and 1750 testify to a veritable ‘addiction’ among scholars for acquiring books and building up extensive private ‘universal’ as well as specialist libraries. These were often begun during their studies at university and enlarged during the course of subsequent academic journeys to Holland, England, France or Italy.¹⁵² Collections amounted to anything from around 500 to more than 10,000 volumes.¹⁵³ Impressive examples of the passion for collecting learned books among medical scholars are the collections of Christoph Hellwig (died 1690) in Greifswald, the *Bibliotheca Helvigiana*,¹⁵⁴ of Johann Christian Senckenberg (1707-72) in Frankfurt on Main with some 10,000 volumes,¹⁵⁵ Albrecht von Haller in Göttingen with around 12,000,¹⁵⁶ the Nuremberg physicians Gottfried Thomasius (1660-1746), younger brother of Christian Thomasius, with 27,000 volumes, and Christoph Jacob Trew (1695-1769), with 35,000 titles.¹⁵⁷ Polyhistoricism and the ‘universal’ library were at their height, but, at the same time, the discerning collections of the Helmstedt professor of law, medicine and natural philosophy, Hermann Conring (1606-81), with 3,291 volumes, the Berlin and Brandenburg court physician Johann Jacob Elsholtz (1623-88) with 1,015 volumes, the Hamburg physician Fogel (3632 vols.) and others, reflect their professional specialist interests and an increasing tendency, during the eighteenth century, towards specialized collections.¹⁵⁸

German translations were not the only means of propagating the influence of Dutch medical writers among the German reading public. In this period, Dutch and Low German were still sufficiently close for Dutch editions of their works to be read quite widely, particularly in the Hanseatic cities and the Baltic region. Indeed, early eighteenth century north German library inventories show that some collections had as many, or

¹⁵² Paul Raabe, ‘Gelehrtenbibliotheken im Zeitalter der Aufklärung’, in Werner Arnold and Peter Vodosek, *Bibliotheken und Aufklärung* (1988) 103-22.

¹⁵³ Hans Dieter Gebauer, *Bücherauktionen in Deutschland im 17. Jahrhundert* (1981) 102-4.

¹⁵⁴ Sigwald Bommer, ‘Die Medizinische Fakultät in den ersten vier Jahrhunderten’, in *Festschrift zur 500 Jahrfeier der Universität Greifswald* (1956) 273-282, here 277.

¹⁵⁵ August De Bary, *Johann Christian Senckenberg (1707-1772), Sein Leben auf Grund der Quellen des Archivs der Dr. Senckenbergischen Stiftung* (1947) 291; Gunter Mann, ‘Johann Christian Senckenberg, sein Medizinisches Institut und seine Bibliothek im 18. Jahrhundert in Frankfurt am Main’, in Paul Raabe (ed.), *Öffentliche und Private Bibliotheken im 17. und 18. Jahrhundert*, 2 vols. (1977) II, 301-316.

¹⁵⁶ Mann, ‘Johann Christian Senckenberg’, 308.

¹⁵⁷ Gebauer, *Bücherauktionen*, 103, 114, 121.

¹⁵⁸ *Ibid.*, 102-5.

more, editions in Dutch than in German. An interesting example is the library of Count Johann Adolf Kielmann von Kielmannsegg, chancellor of the duchy of Holstein, on whose initiative the new university of Kiel was established in 1665. In his collection of over 42,000 titles, for instance, Bontekoe and Blankaart appear more often in Dutch than in German versions whereas English authors appear in Latin but hardly ever in English, at that time a language very little known on the continent, even in the Netherlands which had close commercial links with England and where there was a strong interest in English Puritan literature.¹⁵⁹

Such sporadic research as has been carried out on the personal libraries of important court and civic officials in this period suggests that these frequently contained a substantial number of medical works, among which the publications of the Dutch Cartesian reformers regularly figure. The large collection of Gerhard von Mastricht, for many years, towards the end of the seventeenth century, secretary (syndic) of the city of Bremen, is a striking example, featuring a wide cross-section of Dutch, German and (in Latin) English medical authors. Among these, the printed auction catalogue of his library (1704) lists four publications by Bontekoe, including his complete works, and five by Blankaart, as well as publications by Overkamp, Waldschmidt and Heinsius.¹⁶⁰

Of course, a group which was particularly formative for the propagation, adoption and putting into practice of new medical ideas were those doctors appointed as city physicians. Like their university colleagues, their publications often show a remarkable awareness of recent trends and debates abroad as well as in Germany, with a number of them, like Johann Peter Albrecht at Hildesheim and Johann Schreyer at Zeitz in the case of Dutch, also contributing translations from Dutch, French, Latin, and English to the German medical scene. The personal library of Benedict Muhlius, city physician at Minden, offered for auction in 1741, besides books by such well known foreign medical authors as Willis and Barbette, included works by Bontekoe, Blankaart, Overkamp, Nuck, Daelmans, Van Rusting (in his reforming phase), Waldschmidt, and Dolaëus.¹⁶¹

The great age of polyhistoricism of the late seventeenth and early eighteenth century, endeavouring to bring together all available knowledge of history, geography, and the arts and sciences in large private libraries, also encouraged the rise of learned multi-

¹⁵⁹ *Bibliotheca Kielmans-Eggiana*, 3 vols. (1718); Hoftijzer, 'The English book', 89-107.

¹⁶⁰ *Catalogus Bibliothecae Gerh. V. Mastricht* (Amsterdam, 1704).

¹⁶¹ *D. Benedicti Muhlii Consilarii Aulici Regii Borussici, Senatoris Mindensis, Ut Et Ejusdem urbis et principatus physici ordinarii [...] Catalogus Bibliotheca Venalis* (Hildesheim, 1741) 494-526.

volume encyclopaedias, lexicons and dictionaries in the vernacular. Vernacular encyclopaedias, providing information on the ‘relationship between natural phenomena and theology’, were produced as early as the late twelfth century, mostly, it appears, for courtly audiences, while ‘compendia of knowledge’, translated from Latin, became ‘extremely popular’ from the fourteenth century onward.¹⁶² The innovative elements of Early Enlightenment compendia, in the wake of Bayle’s *Dictionnaire* (1697) and early eighteenth century Dutch encyclopaedias, should not, however, be underestimated. In Germany, between 1700 and 1750, encyclopaedic compendia were popular works of reference for the expert scholar and, to an extent, the literate but ‘unlearned’ lay public as well.¹⁶³ The *Deutsche Acta Eruditorum* refers, in 1713, to the new fashion for lexicons,¹⁶⁴ while another journal remarks, in 1714, ‘lexicons are now so much in vogue that soon one will be buying and selling them like snuff’.¹⁶⁵ ‘The depth and extent of the impact of the Early Enlightenment on European society and culture’, it has been claimed,

is powerfully revealed by the content of these massive works which were expressly produced for a broad market, an audience of scholars and philosophers certainly, but also the new élites of officials, diplomats, patricians, professionals, and courtiers, and even their wives and daughters. They demonstrate that in fifty or sixty years ‘philosophy’, or what we today would call philosophy, science and technology were widely acknowledged to have fundamentally changed the world.¹⁶⁶

Israel claims that ‘while it is true that the intellectual revolution of the late seventeenth century was primarily a crisis of élites [...], it was precisely these élites which moulded, supervised, and fixed the contours of popular culture’.¹⁶⁷

The universal encyclopaedias sought to present new research and ideas, no longer based on tradition and authorities but on reasoning and experience, combining expanding scientific knowledge and quantitative increase of facts with rational transparency. German lexicography reached a ‘high level of quality and quantity’ during the seventeenth century, drawing on Italian, French and Dutch examples, extending ‘polyglot

¹⁶² William Crossgrove, ‘The Vernacularization of Science, Medicine and Technology in Late Medieval Europe: Broadening our Perspectives’, in *Early Science and Medicine* V, 1 (2000) 47-63, here 56.

¹⁶³ Paul Raabe, ‘Gelehrte Nachschlagwerke im 18. Jahrhundert in Deutschland’, in Bernhard Fabian and Paul Raabe, *Gelehrte Bücher vom Humanismus bis zur Gegenwart* (1983) 97-117.

¹⁶⁴ Ibid., 98; *Deutsche Acta Eruditorum* (1713) part 20, 645.

¹⁶⁵ *Neue Bibliothec Oder Nachricht und Urtheile von neuen Büchern und allerhand Gelehrsamkeit*, 10 vols. (Frankfurt, Leipzig, 1709-21) here 1714, part 31, 41; Raabe, ‘Gelehrte Nachschlagwerke’, 98.

¹⁶⁶ Israel, *Radical Enlightenment*, 135.

¹⁶⁷ Ibid., 5.

and bilingual' lexicography for German use.¹⁶⁸ The Germans gained a reputation for compiling 'extensive *collectanea*' and their reference works were equally appreciated outside of Germany. Pierre Bayle, for example, held them in 'high esteem' and praised the Germans for their 'wide reading' and saving him 'the trouble of making compilations'.¹⁶⁹ They also ensured that accumulated knowledge did not sink into oblivion after being superseded or no longer in fashion. Thus, the most extensive eighteenth century vernacular encyclopaedia, the sixty-four volume *Grosses vollständiges Universal-Lexicon aller Wissenschaften und Künste* (Leipzig, 1731-50), of Johann Heinrich Zedler (1706-51), gave longer-lasting status to notable contributors in all the arts and sciences. Zedler's 1749 entry for 'Wund-Artzeney-Kunst' [surgery], for example, still counts Bontekoe, Blankaart, Overkamp, and other Dutch medical doctors, more than four to six decades after their deaths among the best known 'German' surgeons and 'new' authors on surgery whose works had been readily available in German and remained recommended reading.¹⁷⁰ Combining sincere appreciation of recent advances in the sciences, medicine and philosophy with religious orthodoxy and belief in miracles, Zedler fully exemplifies the mainstream tendency in Enlightenment thought.¹⁷¹

The most widely published medical dictionary from the late seventeenth century onward was Blankaart's comprehensive *Lexicon medicum graeco-latinum* (1679) with concise definitions of the Latin and Greek terminology and descriptive commentaries in Latin on medicine, 'natural philosophy', surgery, anatomy, pharmacy and chemistry. With varying titles it underwent more than twenty editions, printed in the Netherlands and Germany, some with German indexes,¹⁷² three full German language editions and seven in English.¹⁷³ Polyglott editions contain, next to the Latin and Greek medical terms, Dutch, German, English, and French definitions.¹⁷⁴ Subsequent editions were continually expanded. The fourth English (1702) edition states,

¹⁶⁸ William Jervis Jones, *German Lexicography in the European Context. A descriptive bibliography of printed dictionaries and word lists containing German language 1600-1700* (2000) Preface.

¹⁶⁹ Heumann, *Acta Philosophorum* (1997 [1716]) part 4, 644-5.

¹⁷⁰ Zedler, *Universal-Lexicon* LIX (1749) 1442-1511, here 1450, 1491-2.

¹⁷¹ Bernhard Koßmann, 'Deutsche Universallexika des 18. Jahrhunderts, Ihr Wesen und Informationswert, dargestellt am Beispiel von Jablonski und Zedler', in *Archiv für Geschichte des Buchwesens*, IX (1969) 1553-96.

¹⁷² S. Blankaart, *Lexicon Medicum Graeco-Latino-Germanicum* (Jena, 1683; Leiden, 1690; Erfurt, Leipzig, 1696; Erfurt, 1698; 1702; Frankfurt, Leipzig, 1704; 1705; Halle, 1714; 1718; 1739; 1748; 1756; 1758). See also Jervis Jones, *German Lexicography*, 113-15; Karl-Heinz Weimann, 'Vorwort' to Stephanus Blancardus, *Lexicon medicum* (Repr. 1973 [1683]) 5-9.

¹⁷³ Blankaart, *Physical Dictionary*, London, 1684; 1693; 1697; 1702; 1708; 1715; 1726).

¹⁷⁴ See, for example, S. Blankaart, *Lexicon Medicum Renovatum*, 3rd revised edn. by Joh. Henricus Schulze (Halle, 1739; 1742; Lovani, 1754; Leipzig, 1832).

As to the Usefulness of it, 'tis plentifully stor'd with all things us'd in the Commonwealth of Physick: Here Physicians may find the various Names of Diseases and their Causes, the Terms of Anatomy, and the Vertues of Drugs, and Medicinal Plants. Here Surgeons may learn the Name of Ulcers and their Causes, the Names of their Instruments and their Use. Apothecaries may here find the various Forms of Medicines, and the Names of them, and the method of Compounding them; and how to chose the best Minerals, Plants, and Drugs. The Chymist may find the Terms of his Art, and the Druggist the Names of the Countries whence the best Drugs come.

Its seventh and last edition in English of 1726 was still 'modestly affirm'd to be the most Compleat Medicinal Dictionary now extant'.¹⁷⁵ The Königsberg medical professor Johann Jacob Woyt (1641-1709), in his own medical reference work, acknowledges Blankaart as having 'paved a good way for it and broken the ice, so to speak'.¹⁷⁶

Among its most famous editors in Germany was Georg Ernst Stahl who contributed a preface to the fourth and fifth edition of the *Lexicon Medicum Graeco-Latino-Germanicum*, published in Frankfurt and Leipzig (1704; 1705; Halle (1714; 1718). As late as 1777, the Erlanger professor of medicine Jacob Friedrich Isenflamm (1726-93), a gifted linguist, published an extended newly edited two volume Latin version,¹⁷⁷ translated into German in 1788. The translator of *Stephan Blancard's Arzneiwissenschaftliches Wörterbuch* (3 vols.), Georg Ernst Kletten (1759-1827), claims the numerous sales and the positive reception of Blankaart's 'universally praised' dictionary had, over the years, not only necessitated new editions but also stimulated scholars to enrich each new edition with various additions to enhance the work's usability, as well as market their own erudition.¹⁷⁸ Isenflamm's improved and enlarged version of Blankaart's medical dictionary thus contained the 'newest discoveries' and many 'elucidations' of the author's original definitions and explanations. The many advances in anatomy, physiology, chemistry, pharmacology, and medicine generally, required a substantial diversion from the original and, in some cases an almost complete reorientation. In botany, for example, Blankaart's description and naming of plants, after the French

¹⁷⁵ Blankaart, *Physical Dictionary* (1726) Preface.

¹⁷⁶ Johann Jacob Woyt, *Gazophylacium Medico-Physicum Oder Schatz-Kammer Medicinisch-und Natürlicher Dinge* [...], 3rd edn. (Leipzig, 1722 [1709]) Address to the reader.

¹⁷⁷ HBL 1st III, 348.

¹⁷⁸ Blankaart, *Arzneiwissenschaftliches Wörterbuch* (1788) I, Translator's preface, 2-3.

botanist Joseph Pitton de Tournefort (1656-1708), had to be realigned to the by then generally accepted system of the Swedish naturalist Carl Linnaeus (1707-78).¹⁷⁹

Yet despite its many merits, Isenflamm's new edition did not, in Kletten's view, have the 'high degree of usefulness' it should have had in Germany, since it remained in Latin and thus largely inaccessible to surgeons, apothecaries, chemists and naturalists. An already existing German translation with four editions published in Bern between 1710 and 1716,¹⁸⁰ seems to have been practically unknown in Germany for Kletten remarks that 'despite the general desire for a German edition and the established trend to translate nearly all [foreign] works, no-one has so far undertaken this task'.¹⁸¹ In 1832, a revised edition of the Isenflamm Latin edition was issued by Karl Gottlob Kühn¹⁸² and later published in German translation in 'Grimmia' (1840).¹⁸³ Blankaart's *Lexicon medicum* thus remained the European standard lexicon for medicine throughout the eighteenth century, maintaining its place for around 160 years. In an extensive French medical biography, published in the early 1820s, Blankaart's *Lexicon* is praised as having been worthy of the generally positive reception it had enjoyed and still to deserve 'une place distinguée dans la bibliothèque du médecin érudit'.¹⁸⁴

iv) Publishers, Advertising and the Book Trade

Among Dutch publishers with a strong interest in the new medical theories the brothers Jan Claesz and Timotheus ten Hoorn stand out. They ran a small publishing firm in Amsterdam and published miscellaneous works not always respectable and not always

¹⁷⁹ Blankaart, *Arzneiwissenschaftliches Wörterbuch* (1788) I, Translator's preface, 3-4.

¹⁸⁰ S. Blankaart, *Neues Medizinisches Wörter-Buch, worinnen erkläret sind, alle in Lateinischer, Teutscher und Französischer Sprache übliche Medicinische und Chirurgische Kunst-Wörter samt deroelben Griechischen Ursprung*, aus dem Lateinischen ins Deutsche übersetzt, und vermehrt durch W.C.M.D.P.B. (Bern: Nic. Eman. Haller and comp., 1710; 1711; 1714; 1716) [not seen]; Wolfgang U. Eckart and Christoph Gradmann, in *Ärzte Lexicon von der Antike bis zum 20. Jahrhundert* (1995) 63, name 1683 as its first edition but are probably referring to the *Lexicon Medicum Graeco-Latino-Germanicum*, first published in Jena in 1683 with a Greek-Latin-German index.

¹⁸¹ Blankaart, *Arzneiwissenschaftliches Wörterbuch* (1788) Translator's preface, 5.

¹⁸² S. Blankaart, *Lexicon Medicum In Quo Artis Medicae Termini Anatomiae, Chirurgiae, Pharmaciae, Chemiae, Rei Botanicae*, Editio Novissima Multum Emendata Aucta à Carolo Gottlob Kühn, 2 vols. (Leipzig, 1832).

¹⁸³ Listed in the Staatsbibliothek Berlin as S. Blankaart, *Kunstsprache der Medizin und Chirurgie: ein arzneiwissenschaftliches Handwörterbuch für angehende Mediciner und Chirurgen*, nach der Kühnschen Ausgabe bearbeitet [transl.: E.C. Oertel; destroyed].

¹⁸⁴ Nicolas Philibert Adelon, *Biographie médicale* 7 vols. (1820-25) [Part of: Antoine Jacques Louis Jourdan (ed.), *Dictionnaire des Sciences Médicales* (1820-25)] II, 281.

approved of by larger publishers.¹⁸⁵ Besides publishing a number of pornographic works, they were receptive to the ‘more radical variants of the new philosophy’, receiving several reprimands from the city government for illegally selling Spinozistic books.¹⁸⁶ As well as the Cartesian works of Blankaart, Bontekoe, Overkamp, and Daelmans, they also brought out Dutch translations of works by the English physicians and chemists Kenelm Digby and John Mayow, edited by Blankaart.¹⁸⁷ Between 1678 and 1714, Jan Claesz ten Hoorn (d. 1714) published ten of Blankaart’s works, some in several editions. In 1686, he applied to the States of Holland for the legal privilege to publish all of Blankaart’s and Overkamp’s medical treatises, in this way attempting to monopolize the sale of a whole category of medical works. This way was rejected, however, by the States who decreed that exclusive rights could be requested only for individual titles.¹⁸⁸

In keeping with his interest in radical ideas, Jan ten Hoorn published Bontekoe’s treatise *Een Nieuw Bewys* (1685) on ‘the unavoidable necessity of doubting’ with its vigorous social criticism, his work on the use and abuse of tea and virtues of tobacco, together with Blankaart’s treatise on coffee (1686).¹⁸⁹ Bontekoe’s *Alle de philosophische, medicinale en chymische werken* (1689) were also brought out by Ten Hoorn, as were his unfinished treatises (1687),¹⁹⁰ said to contain a ‘master plan’ for a ‘sure way by which science and the arts should be dealt with, establishing metaphysics [bovennatuurkunde] as the basis of all sciences’.¹⁹¹ Ten Hoorn also republished Bontekoe’s famous tea treatise, the *Tractaat van het Excellenste Kruid THEE* (1689). His brother Timotheus (1644-1715) was especially interested in erotic novels and ‘medical works that dealt at length with sexuality: conception, childbirth, venereal diseases, themes that also frequently appear in his fictional publications’.¹⁹² He published Blankaart’s treatise on venereal diseases, *Venus belegert en ontset* in 1684, 1688, and 1696.

¹⁸⁵ In a pamphlet, *Relaas van de beroerten op Parnassus* (1690), for example, the Ten Hoorns are severely criticized as ‘limb-brakers of good books’ and ‘wretched worms’, for publishing a Dutch translation of the works of Descartes and reducing them to the ‘disgraceful trumpery’ and ‘fripery of their foul trash’. See Leemans, *Het Woord*, 175.

¹⁸⁶ I. H. van Eeghen, *De Amsterdamse Boekhandel 1680-1725*, 5 vols. (Amsterdam, 1978) V, part 1, 165.

¹⁸⁷ Leemans, *Het Woord*, 278-80.

¹⁸⁸ Ibid., 349-50; Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 201-2.

¹⁸⁹ ‘Blankaart’ [C. Bontekoe], *Gebruik en Mis-Bruik van de Thee* [...] *Hier nevens een verhandeling van de Coffee* [...] also published by Pieter Hagen in The Hague (1686).

¹⁹⁰ C. Bontekoe, *Verscheide tractaetjes, handelende van de voornaamste grondstukken om tot een waere kennisse der filosofie en medicynen te geraeken: zynde een Inleydingh tot de filosofie, metaphysica, logica, physica, als ook een nieuwe Leer vande physiologia, pathologia, ofte kennis vande siektens, nevens een Verhandeling van de geswellen*, also published by Pieter Hagen (The Hague, 1687).

¹⁹¹ Luijsius (ed.), *Het Algemeen Historisch* [...] *Woordenboek* I, 38.

¹⁹² Leemans, *Het Woord*, 279.

Dutch publishers had regular and frequent business contacts with book sellers and publishers throughout Protestant Germany, as also France and Switzerland.¹⁹³ The rapid expansion of the German reading public and book market from the last quarter of the seventeenth century onwards created many new opportunities and possibilities for publishers and booksellers. Besides new ways of advertising and distributing books, the book fairs retained much of their traditional importance as a means of both publicizing and supplying books, albeit with Leipzig increasingly surpassing Frankfurt am Main.¹⁹⁴ Albrecht von Haller, in his travel diary of 1723-27, describes Frankfurt as ‘the delivery point for all German and Dutch books’ but adds that Leipzig had ‘taken away much business’.¹⁹⁵

As the German publishing industry expanded in the late seventeenth century, the relative importance of books imported from abroad markedly decreased. As evident from the table below, compared with the early seventeenth century, there was a virtual collapse of imports from Italy, England, France, and the southern Netherlands. As is evident from the following table, the only still significant foreign source of books by the 1690s was the Dutch Republic.

Table 2: Books produced abroad at the Frankfurt and Leipzig book fairs

Decade	Italy	England	France	South Neths.	Dutch Republic
1610-19	559	151	918	781	798
1620-29	286	77	562	740	416
1630-39	34	15	252	486	665
1640-49	75	7	75	522	826
1650-59	40	27	128	474	865
1660-69	16	3	81	123	727
1670-79	10	2	40	6	326
1680-89	23	33	57	1	336
1690-99	6	—	13	1	247
1700-09	4	—	2	12	22
1710-19	5	—	5	11	56
1720-29	16	2	5	—	47
1730-39	1	7	12	1	110
1740-49	5	3	3	5	470

Source: Goldfriedrich, *Geschichte* II, 80-1.

¹⁹³ Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 163-5.

¹⁹⁴ A. H. Laeven, ‘The Frankfurt and Leipzig Book Fairs and the History of the Dutch Book trade’, in Christiane Berkvens-Stevelinck et al (eds.) *Le Magasin de l’Univers: The Dutch Republic as the Centre of the European Book Trade* (1992) 185-97; Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 89-90.

¹⁹⁵ Hintzsche, *Albrecht Hallers Tagebücher*, 18.

The marked reduction in Dutch publications at the book fairs, after 1670, has been claimed to be due to Dutch publishers' avoidance of the required obligatory 'deposit copy' which, in the case of expensive works, entailed a heavy charge rather than lack of participation.¹⁹⁶

Nevertheless, editions produced in Holland were not the main vehicle of propagating the Dutch Cartesian reformers' works in Germany. The Frankfurt *Catalogus Universalis*, listing all the books for sale at the bi-annual Frankfurt and Leipzig book fairs,¹⁹⁷ confirms that between the late 1680s and 1720s the works of Bontekoe, Blankaart, and, to a lesser extent, Overkamp, Muys, and several others, were translated in large numbers into German and repeatedly re-issued by German publishers, not only in the main publishing centres Leipzig and Frankfurt am Main, but also in Hanover, Hildesheim, Bremen, Halle, Jena, Wolfenbüttel, Berlin, Budissin, Rudolstadt,¹⁹⁸ Hamburg and Augsburg.

Among the book-sale catalogues, the retail *Catalogus librorum medico-physico-mathematicorum* of the influential Nuremberg publisher and printer Wolfgang Mauritius Endter (1653-1723), for example, lists 3,909 titles, of which 2,221 (57%) are medical works, mostly published between 1650 and 1695. 720 books (about 18,5%) of the total range were written by Dutch authors, the majority on medical subjects. These included 651 works in Latin, thirty-three in French, twenty-seven in German, and nine in Dutch.¹⁹⁹ Among the Dutch medical authors are Blankaart with twenty works (fifteen in German), Bontekoe with nine (five in German), Craanen with three (in Latin) and Overkamp with two German translations, these being the most successful popularizers in Germany of medicine based on Cartesian philosophical and Sylvian iatrochemical principles. In addition, the Dutch Cartesians Daelmanns and Heinsius are represented by one German translation each, and Muys with two Latin works.

It speaks for Blankaart's fame that Johann Friedrich Gleditsch (1653-1716), the most important publisher in Germany and biggest importer of books from the Netherlands,²⁰⁰ published at least eight books by him in German translation. Gleditsch had, in 1681, married the widow of the Leipzig publisher Johann Fritsch and successfully ran the

¹⁹⁶ Van Eeghen, *Amsterdamse Boekhandel V*, part 1, 89.

¹⁹⁷ The *Catalogus Universalis* is a valuable guide but, as stated in the 1719 I edition, publishers also sent in titles of books which had not yet been printed 'or might never see the light of day, thus causing book lovers and traders much annoyance, trouble and wasted postage'.

¹⁹⁸ Rudolstadt, or Rudolphstadt, a small town in central Germany on the River Saale, south-west of Jena.

¹⁹⁹ See Wolfgang Mauritius Endter, *Catalogus Librorum Medico-Physico-Mathematicorum* (Nürnberg, 1695); Wolfgang Eckart, 'Anmerkungen zur Niederländischen Buchproduktion', in Van Lieburg and Toellner, *Deutsch-Niederländische Beziehungen*, 77-92, here 83-8.

²⁰⁰ Van Eeghen, *Amsterdamse Boekhandel V*, part 1, 91.

former Fritsch *Verlag*, developing an exceptionally efficient marketing network with many international links, with a reputation further enhanced through publishing the *Acta Eruditorum*.²⁰¹ In 1694, Gleditsch made over the firm to his stepson Thomas Fritsch while, at the same time, founding a new publishing house.²⁰² For taking with him most of the newly won authors, Fritsch apparently ‘never forgave him’.²⁰³ Between about 1710-40, Gleditsch was the most successful publishing firm in the Empire. According to the book fair catalogues, he accounted for 2,060 works between 1681-1739.²⁰⁴

Thomas Fritsch (1666-1726), a very active publisher in his own right with branches in Frankfurt am Main and Prague, and also numerous Dutch contacts,²⁰⁵ became his fiercest competitor. Between 1694 and 1726 he published 993 works.²⁰⁶ Symptomatic of their rivalry in the medical sphere is the fact that Fritsch published five of Blankaart’s works previously published by Gleditsch. Only the *Neues Liecht vor die Apothecker*, usually listed under Blankaart’s name, (Fritsch, 1690; Gleditsch, 1693) did Fritsch manage to issue before his stepfather. Also illustrative of their rivalry was Gleditsch’s publishing Overkamp’s *Neues Gebäude der Chirurgie* (1689), its second improved edition, the *Neu erfundene Heylkunst oder Chirurgia* (1692), and his *Oeconomia animalis* (1690), while Fritsch issued Overkamp’s *Medicinische und Chirurgische Schrifften* (1690; 1704; 1705).

Another successful Leipzig publisher well connected with the Netherlands (as well as France, Stockholm and Warsaw) was Moritz Georg Weidmann (1658-93),²⁰⁷ who had published Thomasius’s *Monats-Gespräche* in Halle. A stepson and successor of the publisher Johann Ludwig Gleditsch (1663-1741), Weidmann published Blankaart’s *Collectanea medico-physica* (1690), as well as his *Reformirte Anatomie* (1691).²⁰⁸ Other significant publishers of this type of medical literature were Gottfried Freytag

²⁰¹ Severin Corsten, Günther Pflug, Friedrich Adolf Schmidt-Müller et al (eds.), *Lexicon des gesamten Buchwesens*, 2nd edn. (1991) III, Lieferung 21, 186; Laeven, *De “Acta Eruditorum”*, 37-8.

²⁰² Corsten et al, *Lexicon* III, 186; Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 121 note 335.

²⁰³ Adalbert Brauer, ‘Johann Ludwig Gleditsch, Leichenpredigt mit Lebenslauf’, in *Archiv für Geschichte des Buchwesens* (1969) IX, 1597-612, here 1598.

²⁰⁴ Corsten et al, *Lexicon* III, 186.

²⁰⁵ Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 91, 121 note: 346, 164.

²⁰⁶ Corsten et al, *Lexicon* III, 62.

²⁰⁷ Van Eeghen, *Amsterdamse Boekhandel* V, part 1, 91, 100; Josef Benzing, ‘Die deutschen Verleger des 16. Und 17. Jahrhunderts’, in Bertold Hack, Reinhard Wittmann, Marietta Kleiss (eds.), *Archiv für Geschichte des Buchwesens* XVIII, 5 (1977) 1077-322, here 1239.

²⁰⁸ In 1705, a new Latin edition of Blankaart’s *Anatomia reformata* was published by Johann Ludwig Gleditsch.

and Gottlieb Heinrich Grentz who, inter alia, both produced several editions of Blankaart's *Neuscheinende Praxis der Medicine*²⁰⁹ and interesting work on the embalming of bodies,²¹⁰ besides his *Speise- und Tisch-Buechlein*²¹¹ and, with another Hanover publisher, Ludolph Heinrich Hauenstein, the *Neue Kunst-Kammer der Chirurgie*,²¹² as well as *Die neue heutiges Tages gebräuchliche Scheide-Kunst*.²¹³

Leipzig, followed at some distance by Frankfurt, was increasingly Germany's chief publishing centre. But other centres, albeit on a far smaller scale, were also gaining ground. Although Hamburg, at the end of the seventeenth century, acquired 'new significance as a gateway of the Dutch book trade in Germany',²¹⁴ of this group of Dutch Cartesian medical authors in German translation apparently only the *Haustus Polychrestis*, appearing under Blankaart's name (1705; 1708),²¹⁵ was published there by Johann Gottfried Liebezeit and Samuel Heyl. Liebezeit, who had a branch in Stockholm as well as Hamburg (1688-1703), is illustrative of the growing penetration of the Scandinavian book market by North-German publishers in the late seventeenth century. The Calvinist city of Bremen, in general much less important than Hamburg as a publishing centre, followed a distinctive line in publishing closely linked to developments in the Netherlands. Among works of the Dutch Cartesian medical authors published there were Bontekoe's *Grundsätze der Medicin* by Philipp Gottfried Saurmans (1691; 1692) and his *Opus Posthumum sive Oeconomia animalis, das ist kurze und außführliche Beschreibung des ganzen menschlichen Leibes und desselben Würckungen* (1692). It was also in Bremen that at least eight of Gehema's works were published by Hermann Brauer, including Gehema's controversial diatribe on blood-letting and purging, and his much-disputed treatise on apothecary reform.²¹⁶

Most of the translated works of Joannes Muys were published by Rupert Völcker

²⁰⁹ Hannover, Frankfurt, Leipzig: Grentz, 1688; 1689; 3rd edn.: Frankfurt, Leipzig, Hannover, Wolfenbüttel, 1690; 4th edn.: Hannover: Freytag, 1699; Hannover, Wolfenbüttel: Freytag, 1700; 1703; 1704) Vandeveldel, 'Bijdrage [...] Blankaart' (1924) 455, also lists: Hannover: 1697; 1708; 1718.

²¹⁰ S. Blankaart, *Neue und besondere Manier alle verstorbene Körper mit wenig Unkosten, dergestalt zu balsamiren, das solche in etlichen hundert Jahren nicht verwesen, noch Farbe und Gestalt verlieren können*. [...] (transl.: G.A.M.), (Hannover, Wolfenbüttel: Grenz, 1690; Leipzig: Freytag, 1696; 1705; Hannover, Wolfenbüttel: Freytag, 1697; 1705) here 1705 edn.

²¹¹ Hannover: Grenz, 1688; Hannover, Wolfenbüttel: Grenz, 1689; Frankfurt, Leipzig: Freytag, 1695; 1705.

²¹² Hannover: Grenz, 1687; Hannover, Hildesheim: Grenz, 1688; 1690; 1692; 4th ed.: Hannover, Wolfenbüttel: Freytag 1699; 1700; Hannover: Grentz, 1700; 1707; Frankfurt, Leipzig: Ludolph Heinrich Hauenstein, 1707; Hannover: Hauenstein, 1708.

²¹³ Hannover, Wolfenbüttel: Grentz, 1689; Hannover: Ludolph Heinrich Hauenstein, 1697; 1708.

²¹⁴ Corsten et al, *Lexicon* III, Lieferung 21, 340.

²¹⁵ See below, ch. VI, 191.

²¹⁶ See below, chapters IV, 151-57, and VII, 225, 242-6, 248, 251-2.

(d. 1697), by then the most important publisher in Berlin. Whereas in the mid-seventeenth century Berlin was not yet of any significance in the German publishing industry, after 1700 it increasingly emerged as a major centre of the book trade and publishing.²¹⁷ By 1750, Berlin, with sixty-three publishing firms, came fourth in Germany, following Leipzig (298), Halle (99), and Frankfurt am Main (84). In fifth and sixth place came Jena (58) and Hamburg (40).²¹⁸

A notable figure in the publishing of medical works in German in the late seventeenth century was Friedrich Arnst (also Arnstein, 1642-1709) who, from 1668 until 1702, had a publishing house in Budissin.²¹⁹ Himself a physician, Arnst collaborated with Andreas Richter (1639-1719) who operated a successful printing firm in Budissin from 1676 until 1707, to bring out some of the most innovative and up to date works in the medical field,²²⁰ including Bontekoe's *Kurtze Abhandlung*, first published in German in 1685 and subsequently reissued several times by Arnst (1686; 1688; new edn. 1691; 1692) and, among others, the Budissin firm Johann Willisch (1700; 1701; 1719). Arnst was especially interested in introducing to the German public the very newest medical works and those he described as 'outstanding specialists' in other disciplines from France, England and the Netherlands.²²¹

Whereas the great majority of German editions of these self-proclaimed medical reformers were published in middle- and north Germany, interestingly, several of the later editions, especially of Blankaart's works, appeared in the confessionally mixed south-German city of Augsburg. The Protestant firm of Paul Kührtze [Kuhzen] (d. 1719) which, between 1700 and 1719, counted among the three most prominent of Augsburg's nine (to twelve) Protestant (six) and Catholic (six) publishing houses,²²² in 1710 reissued no less than seven of Blankaart's works, besides Overkamp's *Medicinische und*

²¹⁷ A. Georgi, *Die Entwicklung des Berliner Buchhandels bis 1825* (1926) 56-60.

²¹⁸ Ibid., 97; Corsten et al, *Lexicon* I (1987) Lieferung 4, 307.

²¹⁹ Josef Benzing, 'Deutschen Verleger', 1089; Budissin, or Bautzen (now also spelled Budisyn), the capital of the Upper-Lausitz on the river Spree, seven miles from Dresden; Corsten et al, *Lexicon* I, Lieferung 4, 262.

²²⁰ Josef Benzing, 'Die Buchdrucker des 16. und 17. Jahrhunderts' im Deutschen Sprachgebiet, 2nd enlarged edn. (1982) 48; Ulla Heise, 'Nachwort' to *Drey Neue Curieuse Tractätgen* (1986 [Budissin: Friedrich Arnst, 1686]) 1-47, here 22-4.

²²¹ Heise, 'Nachwort', 22-3.

²²² Helmut Gier, 'Buchdruck und Verlagswesen in Augsburg vom Dreißigjährigen Krieg bis zum Ende der Reichsstadt 1649-1806', in Helmut Gier and Johannes Janota, *Augsburger Buchdruck und Verlagswesen von den Anfängen bis zur Gegenwart* (1997) 479-516, here 489, 490, 508; David L. Paisey, *Deutsche Buchdrucker, Buchhändler und Verleger 1701-1750* (1988) 146.

Chirurgische Schriften.²²³ Another leading Protestant Augsburg publisher, David Raymond Merz [Mertz], in 1721, brought out Bontekoe's *Grund-Sätze der Medicin und Chirurgie*. None of the Catholic firms appear to have produced this type of literature in Augsburg or, indeed, anywhere else, confirming Kirchner's thesis that this kind of publishing was a more specifically Protestant activity.²²⁴ With the growing Catholic population in Augsburg during the eighteenth century, much of both Protestant and Catholic publishing activity was of religious texts for largely local consumption.²²⁵ It is therefore significant that (apart from the 'Kunstverleger' Jeremias Wolff), Kültze is the only Augsburg publisher-bookseller included in the Nuremberg collection of publishers' portraits, the 'Icones', assembled by Friedrich Roth-Scholtz where he is expressly called an *Eruditus Bibliopola*.²²⁶

The publishing history of medical works translated into German during the Early Enlightenment clearly shows the writings of this group of Dutch medical authors had a prominent place and were seen as being integral to what was widely understood (with some exceptions, e.g. the Stahlians) as recent progress in the medical field. It was often remarked by Dutch, Huguenot, and German, as well as English authors of the late seventeenth and early eighteenth century that theirs was an enlightened (*éclairé/erleuchtet*) age, meaning that recent developments in theology, philosophy, and science, had transformed the general intellectual scene. Academic medical and surgical scholars, and practising physicians, felt they shared in this process of enlightenment and that their science too had been transformed by discoveries especially in anatomy, physiology, chemistry and surgery.

A representative voice, Lorenz Heister (1683-1758), the 'founder of academic surgery' in Germany, whose career exemplifies the close interaction between Germany and the Netherlands in the early eighteenth century,²²⁷ declared in 1719,

²²³ See *Catalogus Universalis* 1710 I; As late as 1742, the *Catalogus Universalis* I (Suppl. I) advertised an Augsburg reissue of Blankaart's *Entsetzte Venus*.

²²⁴ Kirchner, *Grundlagen*, 330.

²²⁵ Corsten et al, *Lexicon* I, Lieferung 3, 174.

²²⁶ Gier, 'Buchdruck und Verlagswesen', 508.

²²⁷ Heister studied medicine at Giessen and Leiden (under Ruysch, Albinus and Boerhaave), served as a field surgeon in the Dutch army during the Spanish Succession War, and obtained his doctorate in Harderwijk in 1708. Back in Leiden, he gave anatomical and surgical *collegia* in French and German. On Ruysch's recommendation, in 1709, he became a senior medical officer of the Dutch army. From 1710-20 professor for anatomy and surgery at the Nuremberg university in Altdorf, Heister was, in 1720, appointed to the chairs in anatomy, surgery and physiology (from 1730 also of botany) in Helmstedt. See *HBL* 1st III, 132; Johanna Geyer-Kordesch, 'Medical Biographies of the 18th Century: Reflecting on Medical Practice and Medical Education in Germany', in Eckart and Geyer-Kordesch, *Heilberufe und Kranke*, 124-47, here 139, 141, 143; Marion M. Ruisinger, 'Auf Messers Schneide, Patientenperspektiven

Finally, in the previous and present century, both through the perfecting of anatomy and ‘Mechanic’, as well as better knowledge of illnesses, surgery has also risen and from day to day been enhanced with better and more useful instruments, good observations and improved methods, and by many skilled men from various nations, but especially the Italians, French, and Germans, among whom the Netherlanders also belong, been brought almost to the highest degree of perfection.²²⁸

Among the ‘best known’ new writers on surgery of recent decades available in German, Heister names Overkamp, Barbette,²²⁹ Bontekoe, Blankaart, Verduc²³⁰ and Reiß.²³¹ Heister’s *Chirurgie*, in his own words the ‘Biebel aller Medicorum, Chirurgorum und Badern’, with numerous editions and translations into Latin, Dutch, English, French Italian, and Spanish, became required reading for prospective barber-surgeons and the primary textbook for the teaching of surgery at the universities through much of the eighteenth century.²³²

Given the central role of medical literature in the eighteenth century, not just in the university teaching of medicine but in the propagation of medical knowledge generally, the translation of medical works both from Latin and from one vernacular language to another, as will be discussed in the following chapter, was an important aspect of advancing awareness, discussion, and the application of new medical theories to medical practice and lifestyle.

aus der chirurgischen Praxis Lorenz Heisters (1683-1758)’, in *Medizinhistorisches Journal* XXXVI (2001) 309-33, here 314, 320.

²²⁸ Lorenz Heister, *Chirurgie, In welcher Alles, was zur Wund-Artzney gehöret, Nach der neuesten und besten Art gründlich abgehandelt* [...], 2nd enlarged and improved edn. (Nürnberg, 1724 [1719]) 7.

²²⁹ The therapeutics of the highly regarded Amsterdam physician Paul Barbette (Leiden doctorate 1645), still reflect many traditional notions. See Paul Barbette, *Medicinische, Chirurgische und Anatomische Schriften* [...] (Lübeck, Leipzig, 1673)

²³⁰ For Verduc, see below, ch. IV, 169-70.

²³¹ Heister, *Chirurgie* (1724) 7; For Reiß, see below, chapters IV, 165-6, and VII, 234-5.

²³² Ruisinger, ‘Auf Messers Schneide’, 320; *HBL* 1st III, 132.

Chapter Four

Translating a Medical Reform Programme

i) The Vernacularization of Medicine

The increasing tendency to publish medical texts in the vernacular, instead of Latin, from the last quarter of the seventeenth century onward, was not a new phenomenon. Since the Middle Ages, Latin texts on the practical aspects of surgery, medicinal herbals and certain diagnostic texts, for example on urine inspection, had been translated into various European vernacular languages, particularly from the latter half of the fourteenth century onwards, though Latin predominated in learned medical writing until the middle of the seventeenth century.¹

Next to the gradual increase in the vernacularization of medical texts, especially surgical works, a gradual transfer took place, after 1550, from medieval scholastic science with its strong reliance on ancient medical tradition and an established hierarchy of authorities, with Galen in the leading role, towards an empiricist inductive methodology based on observation and evidentiality. Scientific writing changed from interpretation of classical texts and the use of prescriptive phrases to an emphasis on the author's personal findings and judgement.² As even advocates of the new knowledge were trained in the Galenic tradition, the change was slow and the wholesale rejection of older medical thinking and practice and the 'root and branch' reform proposed by Bontekoe and his allies in the vernacular, from the 1680s onwards, was essentially unprecedented.

Many academic physicians tended to see much that was worrying about this

¹ William Crossgrove, 'Introduction' to *The Vernacularization of Science, Medicine and Technology in Late Medieval Europe*, Special Issue of *Early Science and Medicine* III, 2 (1998) 82-7, esp. 83; Crossgrove, 'Vernacularization', 54-5, 57-61; Irma Taavitsainen and Päivi Pahta, 'Vernacularisation of Medical Writing in English: A Corpus-Based Study of Scholasticism', in *Early Science and Medicine* I, 1 (1996) 157-81, here 157, 159.

² Taavitsainen and Pahta, 'Vernacularisation' 161-8.

process. The vernacularization of medical works was in itself a threat to their specialized medical knowledge and professional prestige. Physicians had long been advised to employ academic terms, including ‘big words’, such as *oppilatio* for ‘obstruction’, as suggested in a thirteenth-century Latin tract entitled *Precautions to be Observed by Physicians*, because ‘it helps greatly that a term is not understood by the people’.³ John Caius, describing the state of medical writing in England in 1552, continued to reflect the generally held opinion among learned physicians that ‘the common setting furthe and printing of euery foolishe thyng in englishe, both of phisicke vnperfectly, and other matters vndiscretely diminishe the grace of thynges learned’.⁴ But already in 1539, Sir Thomas Elyot who wrote ‘one of the most popular and frequently reprinted guides to health’, defiantly defended his right to publish on medicine despite not being a physician. ‘But if Phisitions be angry, that I have written phisicke in English’, he states in his *Castell of Health*, ‘let them remember that the Greeks wrote in Greeke, Romaines in Latin, Avicenna, and the other in Arabicke, which were their own proper maternall tongues.’⁵

The need for competent, authoritative surgical instruction in the vernacular at a time when the unregulated practices of barbers, surgeons and quacks allowed for widespread medical abuse, in any case made the translation of Latin surgical tracts a necessity, as was noted by the Antwerp physician Maarten Everaert in his translation of a Latinized Paracelsian work into Dutch (1563).⁶ A few years earlier, in 1556, the surgeon Pieter Volck Holst had rendered a surgical work by Paracelsus from German into Dutch ‘because so little comes to light in this language concerning this science’. All the surgical books written so far, according to Volck Holst, had been ‘of very little benefit’ and contained ‘more errors than remedies’. If one followed their advice and prescriptions ‘more likely ten would be murdered and [only] four helped’.⁷ Surgeons were often ignorant of the causes of wounds and used medicinal remedies

³ Luke Demaitre, ‘Medical Writing in Translation: Between *Ars* and *Vulgus*’, in *Early Science and Medicine* III, 2 (1998) 88-102, here 91.

⁴ John Caius, *The Sweating Sickness*, 6, quoted in Taavitsainen and Pahta, ‘Vernacularisation’, 157.

⁵ Andrew Wear, ‘The popularization of medicine in early modern England’, in Roy Porter (ed.), *The Popularization of Medicine 1650-1850* (1992) 17-41, here 23.

⁶ Theo Hermans, *Door eenen engen hals: Nederlandse Beschouwingen Over Vertalen 1550-1670* (1996) 16.

⁷ *Ibid.*, 38-42.

without knowing their composition. If a physician, on the other hand, was called to a patient requiring surgery, he would not know how to treat the wound. One of the main reasons why there was no better understanding of cause and effect was that physicians had no wish also to be surgeons, the social status of the two professions being so different. Such a man, comments Volck Holst, was ‘as rare as the bird phoenix’.⁸

ii) Rationales for Translating Dutch Medical Books into German

The frequently inadequate medical knowledge of surgeons who were often unfamiliar with Latin and received a less than adequate surgical training, continued to be deplored throughout the seventeenth and eighteenth centuries. Bontekoe and Gehema complained that boys taken on as surgeons’ apprentices could hardly read or write. During their three to seven-and-a-half years’ apprenticeship, instead of being taught the rudiments of anatomy and surgical skills they learned to do barber jobs and, at best, were allowed to observe their masters’ healing methods, but ‘often without being let into the secrets of their practice and remedies’.⁹ Tobias Peucer, surgeon in the German town of Gorl and translator of Blankaart’s *De nieuw hervormde anatomia* also complained that if apprentices wished to be instructed in anatomy, most of their masters, except for a few competent surgeons, either lacked knowledge of it, or the household chores the boys were obliged to do prevented it, so that ‘such a poor dolt has to be grateful if he learns how to cut a beard à la mode or apply a plaster’. Books on anatomy and surgery, therefore, could ‘only be of benefit, especially to surgeons’ and, in order to by-pass the time-consuming learning of Latin, their translation into German was ‘truly necessary’.¹⁰ Anticipating physicians’ disapproval of ‘making the secrets of practical medicine common knowledge in this way, and thus playing into the hands of the quacks’, another translator justified his efforts by observing that army surgeons were often unavailable and that barber

⁸ Hermans, *Door eenen engen hals*, 40.

surgeons could then not be stopped from ‘curing in the field’ and therefore needed useful instruction to prevent the destruction of many people.¹¹

But in the decades around 1700, use of German for purposes of medical instruction still required justification. Peucer was well aware that ‘know-all critics’ in Germany would object to his translation of Blankaart’s *Nieuw hervormde anatomia* on the grounds that it ‘will stir up even more trouble-makers in medicine’. How could anatomical and surgical books translated into German be thought of as meddlesome, he argues, as they do not contain medicines for treating internal ailments?¹² In the fifth (1720) edition of his *Nieuw hervormde genees-konst* the Antwerp physician Aegidius Daelmans states that for many years he had endured complaints that his writing in the vernacular to popularize his medical book for ‘everyone’ was ‘not fitting’. His conviction that ‘ship surgeons, who had to act as both physician and surgeon, could gain much insight from it’, encouraged him to resist such criticism.¹³

Insight, and the foundation of surgical practice on reason and experience, instead of a ‘Parrot-like, Empirical, and Pore-blind Doctrine’, were also the concern of the English translator of Muys’s *Redelyke Heelkonstoeffening* (1684-5), who took an obvious delight in coming across this serviceable surgical treatise by a ‘true *Medico-Chyrurgeon*’, so ‘Consonant to the Reason and Experience of every Rational, Unbyassed and unprejudiced Chyrurgeon’. He therefore

could not let it pass without an *English Dress*, that thereby all those that are born with a Genius fit to understand Reason (though not instructed in the Latin Tongue) may have the advantage of perusing the Judgement of another harmoniously concurring with theirs. For it hath not seldom happened that many good Apprehensions of things have been quickned, and Midwifed into the

⁹ Bontekoe, *Nieuw Gebouw* (1680-81) D3; J. A. Gehema, *Wohlversehener Feld-Medicus, Begreifende die Mißbräuche Welche bishero so wol in Anstellung der Hn. Feld-Medicorum, als Feldscherer, wie auch bey Einrichtung der also genanten Feld-Kasten vorgangen sind: sambt Einem unmassgeblichen wohlmeinenden Project, wie und auff was weise koenne remediret werden* (Hamburg, 1684; Rostock, 1689) here 1684 edn., 29-30.

¹⁰ Blankaart, *Reformirte Anatomie* (1691) Preface.

¹¹ Georg Ernst Stahl, *Gründliche Abhandlung Des Aderlassens, Sowohl den Gebrauch und Mißbrauch [...] betreffend* (Leipzig, 1734 [1719]) Translator’s preface, A3-4.

¹² Blankaart, *Reformirte Anatomie* (1691) Preface.

¹³ Daelmans, *Nieuw hervormde genees-konst* (1720) Preface.

World by such *Publications* as these of our Author, which (otherwise) would never have seen the Light; but have died and perished with the Womb in which they were conceived.¹⁴

Publication in the Dutch vernacular acted as an almost complete bar to their being taken notice of in England and France. In the preface to the French version of Bontekoe's *Korte Verhandelng* (1684) the translator states, 'It is beyond doubt that his books would have had a greater impact, and been much more widely propagated among foreigners, had they been written in the Latin language'.¹⁵ The fact that Bontekoe published most of his works in Dutch did not prevent him being read in Scandinavian lands (they frequently appear in Swedish and Danish libraries) or to a considerable extent also in Germany, particularly in the Low-German speaking areas. Publications in Dutch, then usually referred to as 'Nederduyts' or 'Duyts', despite the efforts of German governments to stigmatize Low-German as a 'low variant' and replace it with High German for all public services,¹⁶ were readily understood in the Low-German areas and in German-speaking Baltic cities like Danzig, Elbing, Mitau, and Riga. Nevertheless, translating these works into High German undoubtedly greatly enhanced their impact in Germany and central Europe more generally. Johann Christian Rodochs, physician in the Saxon town of Weißenfels, near Leipzig, and translator of Blankaart's *Schouw-Burg der Rupsen, Wormen, Maden en vliegende Dierkens daar uit Voortkomende* (1688) on caterpillars, worms, maggots and flying insects, notes that unless translated, 'only very few High-Germans would be able to read Dutch books'.¹⁷ In a polemic about tea, published in Augsburg, one of the participants remarks, 'I should ask to have one or two words explained to me. I can guess most of the Dutch, but I am not firm in the language, and there is always a word I don't understand'.¹⁸ But concern

¹⁴ Muys, *Rational Practice of Chyrurgery* (1686) 'To the Reader', A2-3.

¹⁵ Bontekoe, *Nouveaux Éléments* (1698) fo. 111.

¹⁶ William Jervis Jones, *Images of Language, German Attitudes to European Languages from 1500-1800* (1999) 22.

¹⁷ S. Blankaart, *Schau-Platz Der Raupen, Würmer, Maden und Fliegenden Thiergen Welche daraus erzeugt werden Durch eigene Untersuchung zusammen gebracht* (Leipzig, 1690) Preface.

¹⁸ Septimo Podagra [pseud.], *Der profitable Apotheker-Tod in dem frembden Kräutlein Thee samt seiner Medicinischen Sackpfeiffe* (Augsburg, 1721) 130.

about revealing specialized medical knowledge in the vernacular to a wider reading public remained prevalent, the practice being widely frowned upon, in Germany even as late as the late 1760s, as is shown by reactions to the more medically specific explanations and therapeutics offered in later issues of Unzer's journal *Der Arzt*.¹⁹

Bontekoe who wished that physicians, as a 'properly defined profession', should act as 'public minister[s]' and publish health-promoting books like his tea treatise 'in a language everyone can understand', was nevertheless not in favour of disclosing *all* medical knowledge to the general public in the vernacular which, he agreed, would encourage dangerous self-doctoring, and quacks and apothecaries becoming half-baked surgeons.²⁰ He was, at the same time, severely criticized for doing exactly that. 'What', asked the Amsterdam physician Pieter Bernagie (1656-99), 'does the common man care about many of the things he touches upon in his writings?' In his opinion, this was 'the right way to rob people of their lives, and to push countless numbers into the grave'.²¹

In seventeenth-century England, medical popularization was more accepted and formed a 'historically significant part of the medical enterprise'.²² Despite the limitations of readership, 'health-advice books were already very popular in the sixteenth century'. Andrew Wear refers to Paul Slack's calculation that 'in England, between 1486-1604, 115 editions of explanatory textbooks on medicine and books of regimen were issued in the vernacular out of a total of 392 editions of books in English dealing with medicine'.²³ Further evidence of this remarkable shift to publication in the vernacular is Charles Webster's finding that between 1640 and 1660, 207 out of 238 medical works were produced in English.²⁴ In fact, the 'vast majority of English book production' was 'aimed at the popular market and published in the vernacular'.²⁵

A large number of popular medical books published during the seventeenth

¹⁹ Beutler and Gutsmuth, *Allgemeines Sachregister*, 8.

²⁰ Bontekoe, 'Waarschouwinge', in *Tractaat* (1679) A5; See also *Antwoord van Pieter Bernagie*, 14-6.

²¹ *Antwoord van Pieter Bernagie*, 15.

²² Roy Porter, 'Introduction', in Porter, *Popularization*, 1-16, here 2.

²³ Andrew Wear, 'The History of Personal Hygiene', in W. F. Bynum and Roy Porter, *Companion Encyclopedia of the History of Medicine*, 2 vols. (1993) II, 1283-308, here 1289.

²⁴ Charles Webster, *The Great Instauration: Science, Medicine and Reform 1626-1660* (1975) 267.

²⁵ Hoftijzer, 'The English Book', 91.

century, often written by physicians, gave detailed advice on how the public could treat serious illness explaining that patients might lack the means to consult a physician (though preferable), that a physician might not be at hand, and that ‘medical skill was one of the attributes of an accomplished lady’.²⁶ Publication in the vernacular, furthering ‘popularization of learned medicine’ in England, was fuelled by a strong sense of ‘Englishness’, a ‘wish to appear respectable and learned, a confidence in one’s own experience and knowledge, and the desire to make medical knowledge – about diet, self-help treatment and preventive measures - available to a wider number of people’.²⁷ Popular health books, like almanacs, next to the Bible probably the ‘most common form of the printed word in English households’, besides providing a calendar, advice on climate and the weather, and forecasts indicating ‘astrologically favourable days for blood-letting, purging and bathing’, on agricultural activity, and political commentaries, represented ‘one of most widely distributed sources of health information in the seventeenth and eighteenth century’.²⁸ In Germany too almanacs had a long-standing tradition. But it has been claimed that medical handbooks for general consumption, as well as ‘Gesundheitskatechismen’ [catechisms of health] as a specific concept of medical ‘Volksaufklärung’, developed as an important genre only from the mid-eighteenth century onwards.²⁹ However, this would seem to ignore the earlier impact in the vernacular of both the Cartesian reformers and the Stahlians.

iii) Suitability of the German Language for Science and Medicine

In Germany, access to and possession of knowledge, previously restricted to professional and academic elites, was advocated in the vernacular, and for everyone, by Christian Thomasius, in his *Monats-Gespräche*.³⁰ Reviewing Overkamp’s

²⁶ Wear, ‘Caring for the sick poor’, 55.

²⁷ Wear, ‘Popularization of medicine’, 24-5.

²⁸ Mary E. Fissell, ‘Readers, Texts and contexts: vernacular medical works in early modern England’, in Porter, *Popularization*, 72-96, here 72-4; Thomas, *Religion*, 293-5.

²⁹ Lindemann, *Health and Healing*, 65-6, 262-71; Irmtraud Sahmland, ‘Der Gesundheitskatechismus – ein spezifisches Konzept medizinischer Volksaufklärung’, in *Sudhoffs Archiv* XXXV, 1 (1991) 58-73.

³⁰ Thomasius, *Monats-Gespräche* (1690) Dec. 1689, 1041-50.

Oeconomia animalis, oder gründlicher Unterricht von der Geburt, Nahrung und Wachstum des Menschen, published in 1690, Thomasius sarcastically derides the established opinion that erudition can only be found ‘where the double-darkness of the formal syllogism and Latin dominates’.³¹ Books about ‘physics and medicine’, he argues, whose content applies to the broader public, should be written in German and be publicized ‘also among our people who do not understand any foreign language, or make a living from their erudition’.³² Thomasius anticipates strong disapproval from ‘pedants who alone want to be clever’,³³ and indeed the abrasive Bontekoe in particular met with plenty of it, but the general demand for his works and those of Blankaart, Overkamp, Daelmans (and Muys to a lesser extent), outstripped criticism. Part of their impact is due to an uncompromising approach, reflected in their titles both in Dutch and in German translation, which hold out not just the promise of new medical knowledge but root and branch reform replacing older medical practice and thinking. Even if their scientific value is questionable by modern standards, part of the novelty of their books lay in the zeal of these leading university-trained physicians to convey their medical ideas not only to colleagues but also to the lay public, a strategy soon also adopted by their Stahlian critics. Both instigated changes in the content of what was offered in the vernacular, and thus pushed forward the debate around ‘renewal’ and enlightenment.³⁴

According to Thomasius, the majority of books written in, or translated into, the German vernacular were of a trivial nature and even among people genuinely concerned with promoting the German language very few saw to it that books leading to the ‘cognition of truth and a virtuous way of life’ were available in German. Translators like Johann Schreyer³⁵ who rendered Overkamp’s *Oeconomia animalis* and his *Nieuw Gebouw der Chirurgie* into German, had therefore performed valuable services for the German language and public generally by

³¹ Thomasius, *Monats-Gespräche* (1690) Dec. 1689, 1045; See Geyer-Kordesch ‘Deutschsprachige Bücher’, 96-7.

³² Thomasius, *Monats-Gespräche* (1690) Dec. 1689, 1044.

³³ Ibid.

³⁴ Geyer-Kordesch, ‘Deutschsprachige Bücher’, 98-9; Geyer-Kordesch, ‘Georg Ernst Stahl’s [...] medicine’, 85-7; Geyer-Kordesch, *Pietismus*, 118-139.

³⁵ Johann Schreyer studied in Jena and obtained his doctorate around 1660. See *HBL* 1st V, 238.

bringing such useful books to their attention.³⁶ Thomasius confessed not to have discussed medical books in earlier issues of the *Monats-Gespräche* partly because he was ‘least knowledgeable about medicine’, and partly because the example of the comic playwright Molière (1622-73), who had suffered ‘persecution’ for offending the medical profession in his comedy *Tartuffe*, had shown that it was ‘very dangerous to mock this kind of people’ who appeared to be ‘the most irascible’.³⁷ It therefore greatly appealed to Thomasius with his particular dislike of ‘pedants’ who, ‘under the pretence of wisdom commit great follies’, that authors such as Bontekoe, Gehema and Overkamp sharply criticized them, as it were on his behalf, refuting their errors and telling the truth in so distinctly a ‘German fashion’ that they could easily recognize themselves.³⁸

Another objection to medical books appearing in German was the use of vernacular terms for the human anatomy, the genitalia in particular, which was deemed obscene and offensive. Thomasius dismissed this as hypocritical, seeing those who took offence at ‘natural words’ as being not unlike the Tartuffian lady who publicly talked about nothing but sermons and psalms, and would not suffer any pleasantries or gladness in persons of her own sex, but secretly engaged in morally reprehensible pastimes with her coachmen and lackeys.³⁹ In his view, no word is in itself ‘ugly or obscene’ and becomes so only where used with this intention. ‘Making use of words created in a language to name natural behaviour or natural parts’, contends Thomasius, and put into lexicons for that purpose, ‘cannot justifiably be complained of, particularly if it is done in order to develop human reason to perfection, as in the case of books on medicine and physics’.⁴⁰ Thomasius praised the French for publishing their works mostly in the vernacular and translating Latin, Greek and, on occasion, also German authors into French, ‘because in this way learning is propagated to great advantage’.⁴¹

Like Thomasius, and other figures of the Early German Enlightenment, Leibniz

³⁶ Thomasius, *Monats-Gespräche* (1690) Dec. 1689, 1043-4.

³⁷ Ibid., 1049.

³⁸ Ibid., 1049-50.

³⁹ Ibid., 1048.

⁴⁰ Ibid., 1047.

⁴¹ Walter Fränzel, *Geschichte des Übersetzens im 18. Jahrhundert* (1914) 26.

also took the view that subjects of ‘more weight and emphasis’ should be addressed in the German language. In his *Ermahnung an die Teutsche, ihren Verstand und Sprache beßer zu üben* (1679, not published until 1846), he deplores the fact that despite the efforts of ‘praiseworthy people’ who had laboured, mainly within the confines of poetry, to improve the German language, ‘German laxity’ and self-contempt had obstructed progress. Rhymes and *Lustschriften*, no matter how well written, could no longer overcome this sorry state and because only rarely had anything been written in German that contained ‘core substance’, and everything was usually documented more aptly in other languages, it was not surprising the Germans’ habitual disdain for their own language had remained unchanged.⁴² This theme was also taken up by the *Deutsche Acta Eruditorum*, commenting that the German nation had always preferred to defer to foreign nations rather than their own in matters of language, dress fashions, or cuisine, and that concern for the German language was deemed ‘vulgar and contemptible’.⁴³ Foreigners, suggests Leibniz, whose suppleness of language, ‘like polished glass’, promotes astuteness of mind and ‘transparent clarity’, are to be admired while the German nation remains ‘overcast as by a dark cloud’.⁴⁴ The only means of bringing German into high repute with foreigners was for the Germans to exercise their language in the sciences and main areas of study. In Leibniz’s view, the ‘flowers of dainty ideas’ soon lost their appeal if not nourished by the ‘sap of the abiding sciences’.⁴⁵

Leibniz’s historical perspective has been viewed as an elaboration of themes already voiced since the mid-seventeenth century such as seeing the Reformation as an age of increasing standardization of vernacular language, the flood of foreign words around the time of the Thirty Years War, and growing French influence after the peace of Westphalia.⁴⁶ While, on the one hand, the German poet Johann von Rist (1607-67), in his *Rettung der Edlen Teutschen Hauptsprache* (1642), comments on

⁴² William Jervis Jones, *Sprachhelden und Sprachverderber, Dokumente zur Erforschung des Fremdwortpurismus im Deutschen 1478-1750* (1995) 542.

⁴³ *Deutsche Acta Eruditorum* (1716) part 41, 329.

⁴⁴ Jervis Jones, *Sprachhelden*, 540, 542.

⁴⁵ *Ibid.*, 543.

⁴⁶ *Ibid.*, 541.

the Dutch and their ‘un-German way of speaking’ which, he laments, ‘we have adopted from the Netherlanders and, up to now, applied to no small reduction of our own language’,⁴⁷ others, notably Leibniz, took a different view. As part of his German language reform programme, he recommends assimilating words from languages of Germanic origin, especially Dutch, Low-German, and other ‘dialects’, and even English and the Nordic languages rather than Latin, French, Italian and Spanish. He particularly praises the Dutch for their efforts to purify and enrich their language,⁴⁸ presumably a reference to the campaign promoted by lexicographers and language reformers like Lodewijk Meijer [Meyer] (1629-81)⁴⁹ with whom Leibniz conferred during his two-months visit to Holland in 1676, and who aspired to make the ‘arts and sciences’ known to his countrymen in their ‘mother tongue’.⁵⁰

A similar point was made by Albrecht von Haller during his stay as a medical student in Holland, during the mid-1720s, noting in his diary that the Dutch had ‘done better with their language than any other nation; by enriching it with many thousands of native words and excluding foreign idioms they have done what the Germans had intended to do’.⁵¹ This could be read as implying that no great progress had been made in the development of the German language in scientific terms. But in all fairness, German academics did endeavour to convey their learning and ideas in their own language, even if not always succeeding. After attending a physiology lecture by Georg Daniel Coschwitz (1679-1729), professor of medicine at Halle, in 1726, Haller commented that ‘he lectures, like other German professors, invariably in German but curiously interspersed with Latin’. Of Friedrich Hoffmann’s lectures he observed, ‘He dictates in Latin but elaborates in German’.⁵²

Translation of foreign books on medicine and science into German, particularly

⁴⁷ Jervis Jones, *Images*, 21.

⁴⁸ Jervis Jones, *Sprachhelden*, 561; See also Jervis Jones, *Images*, 23.

⁴⁹ Meijer was a practising physician in Amsterdam with Leiden doctorates in philosophy and medicine (he studied under Sylvius), but none of his postdoctoral writings directly concern medicine.

⁵⁰ Lodewijk Meijers *Woordenschat, Verdeelt in 1) Bastaard-woorden, 2) Konst-woorden, 3) Verouderde Woorden*, 6th edn. (Amsterdam, 1688) Preface unpaginated; Israel, *Radical Enlightenment*, 198, 506.

⁵¹ Hintzsche, *Albrecht Hallers Tagebücher*, 22.

⁵² *Ibid.*, 68.

from the 1680s onward, can be said to have made a significant contribution to the advance of German in these fields. In 1762, the professional translator Johann Gottfried Gellius remarked in his (now very rare) *Anmerkungen zum Gebrauche deutscher Kunstrichter* that owing to the numerous translations into German ‘our language has, within a short period of time, gained beyond measure. Through them, millions of the most important, useful, profound truths were passed on to Germany which otherwise would not be known, and the sciences have spread far more rapidly’. According to Gellius, there had not been enough good German authors to supply the nation and it was through translations that the world had first been stimulated to ‘think’. Gellius identified the main centres of eighteenth century German translation activity as Leipzig, Berlin, Hamburg, and Halle. By contrast, he claimed, ‘over Vienna, Frankfurt, Nuremberg, Augsburg, Ingolstadt, and Ulm the sky is still overcast, although the good people [there] believe they are seeing the brightest sunshine’.⁵³

The ‘flooding’ of the German book market with translations has been plausibly attributed to a ‘cultural and literary need to catch up’.⁵⁴ In the traditional historiography of the German *Aufklärung* the stress has been very much on the importance of English, and especially French, intellectual and scientific influence.⁵⁵ With regard to the Early Enlightenment up to around 1740, translation evidence suggests, however, that Dutch intellectual and scientific influence was of at least comparable importance. Johann Andreas Mahler, for example, physician at Dresden and translator of the anatomical and surgical instructions for the cure of leg injuries by a French surgeon, asserts that in future no one could excuse himself citing lack of knowledge of languages, since this had been remedied through diligent rendering of the best authors and most useful books for the benefit of surgeons from French and Dutch into German.⁵⁶ The use made of translated foreign books in Germany was so

⁵³ Helmut Knufmann, ‘Das deutsche Übersetzungswesen des 18. Jahrhunderts im Spiegel von Übersetzer- und Herausgebervorreden’, in Bertold Hack and Bernhard Wendt (eds.), *Archiv für Geschichte des Buchwesens* IX (1969) 491-572, here 545.

⁵⁴ Ibid.

⁵⁵ Ibid., 494.

⁵⁶ Mon. Lemery, *Nützlicher Bein Arzt oder Anatomische und Chirurgische Anweisung, Wie man die Natur und Eigenschafft der Beine richtig verstehen, ihre Kranckheiten erkennen, und selbige glücklich curiren soll* (Dresden, 1711) Translator’s preface.

extensive that Haller, in 1748, could express particular satisfaction at the appearance of a translation from Latin of a German author's 'introduction to surgery':

We are pleased about this work which now, because it gets into the hands of far more surgeons, has also become generally more useful and, I think, will rescue the Germans from the hated reproach that they make do in all subjects with translations from the works of foreign nations.⁵⁷

iv) Accuracy, Translation Quality, and Manipulation of Texts

An investigation of late seventeenth and early eighteenth century attitudes to translation, as revealed in translators' and editors' prefaces, shows that translators almost never limited themselves simply to translate the original at hand, but generally considered it permissible, indeed necessary, to manipulate the text.⁵⁸ In the modern literature on translation, a distinction is often made between the method of translating that takes the reader as much as possible to the original text with all its characteristics of language and style, striving for 'formal equivalence', and that which, conversely, adjusts the text to the new readership, 'the focus of attention', it has been said, being 'directed not so much toward the source message, as toward the Receptor Response'.⁵⁹

In the context of this study, comparing the original Dutch medical texts with their German translations shows in most cases a remarkable degree of convergence and synonymy, as well as concern for comprehensibility and precision. Some translators claim to have produced a more comprehensive and complete version than either the Latin or Dutch rendition, or 'changed' and 'improved' an earlier German translation, when, except for minor alterations such as insignificant word changes and translating some Latin terms into German, besides modifying punctuation and shortening some sentences, they have, in fact, altered very little. The Augsburg

⁵⁷ Römer and Usteri, *Herrn von Hallers Tagebuch* I, entry: 1748, 523, commenting on Z. Platmer, *Gründliche Einleitung in die Chirurgie* (Leipzig, 1748) [not seen].

⁵⁸ Knufmann, 'Deutsche Übersetzungswesen', 491-572, here 529-31.

⁵⁹ E. A. Nida, *Towards a Science of Translating* (1964) 165; F. Akkerman, *Studies in the posthumous Works of Spinoza, On Style, earliest Translation and Reception* (1980) 105.

surgeon Johann Caspar Reiß, for example, republished Bontekoe's *Grundsätze der Medizin* in 1721 and copied an earlier (1691) translation almost word for word. Others took notable pride in their efforts to produce German equivalents and elucidate specialized terms. The translator of Stahl's *Gründliche Abhandlung Des Aderlassens* (1719), anxious to ensure the reader's 'complete understanding of the author's meaning', added many of Stahl's Latin terms in brackets. But despite 'employing all possibilities' to translate Stahl's work 'clearly and comprehensibly enough', he alerts the reader to the 'frequent profundity of words' which, in translation, might appear unusual [ungewöhnlich] and required 'exact and attentive' reading.⁶⁰ Rodochs, in his translation of Blankaart's *Schouw-Burg der Rupsen*, claims to have 'reconciled contradictory elements' and ascribes any lack of polish in the German translation to the 'bad style of the Low German [i.e. Dutch] which scarcely permits one to present the facts more elegantly in High German'.⁶¹ In some cases, this led to the creation of words leaving the modern reader bemused and amused but which will have been perfectly intelligible to seventeenth and eighteenth century physicians and surgeons. Thus, in Overkamp's *Neues Gebäude der Chirurgie*, inhaled air endowed with dispersing qualities becomes 'Himmelsfeuer' (heaven's fire),⁶² sunbeams are 'Himmelskügelein',⁶³ and in contemporary medical terminology muscles are 'mice'.⁶⁴ The translator, Johann Schreyer, commends Overkamp's 'good instructions on how the body must be conditioned for keeping it in a state of health, how it can be overthrown, how the changed composition of the body fluids, of which all illness consists, can be corrected, and how medicines work in the body', concluding, 'a good deal towards knowing oneself is clearly illuminated here'.⁶⁵ At the same time, he expresses dissatisfaction with Overkamp's original Dutch version, describing its 'context' as 'confused' with everything 'very much intermingled', much repetition and wrong order, as well as 'abounding with printing errors'. Recognizing, however, Overkamp's 'good views and intentions',

⁶⁰ Stahl, *Gründliche Abhandlung* (1734) Translator's preface, A4.

⁶¹ Blankaart, *Schau-Platz Der Raupen* (1690) Translator's preface.

⁶² See above, ch. II, 77; Overkamp, *Neues Gebäude* (1689) 13, 14; Overkamp, *Oeconomia animalis* (1690) 86, 99, 100, 160, 167.

⁶³ Overkamp, *Oeconomia animalis* (1690) 48.

⁶⁴ Woyt, *Gazophylacium*, 600-1.

Schreyer ascribes the book's disarray to its perhaps being copied by 'someone not well versed in the sciences who wrongly understood the *preceptorem* and may also have got it printed'.⁶⁶ The polyhistor and literary scholar Reimmann also criticized Overkamp's *Neues Gebäude der Chirurgie* for the description of illnesses in words and phrases not relevant to them.⁶⁷

Bontekoe showed himself well aware of the problematic nature of writing in the vernacular, being 'more familiar with foreign [medical] words than with their native equivalents' and often finding himself 'embarrassed to think up words in the Dutch language that had as much expressive power as the foreign ones'.⁶⁸ Bontekoe and his allies shared the ideal of purging the use of foreign and Latinizing terms from the Dutch vernacular scientific and medical literature and adopt what has been termed a 'puristic terminology', relying on authentically Dutch words and roots as advocated by Meijer and Jan Hendriksz. Glazemaker (1620-82), the translator of Descartes and many other French works,⁶⁹ as well as Spinoza, into Dutch.⁷⁰

Inevitably, translation into German was by no means always to the Dutch author's satisfaction. Nicolaas Heinsius, for example, in one of his works complained bitterly about the 'arch-charlatan' who had translated into German his treatise on venereal disease *Kwynende Venus* (Amsterdam, 1697; Utrecht, 1700). Not only had the anonymous translator [Heinrich Elias Hundertmark]⁷¹ perverted its title to *Schmachtende Venus*⁷² and published it twice, in 1700 and 1703, but he had

⁶⁵ Overkamp, *Neues Gebäude* (1689) Translator's dedication, A3.

⁶⁶ Ibid., Translator's address to the reader, B4.

⁶⁷ Reimmann, *Versuch*, 820.

⁶⁸ Bontekoe, 'Waarschouwinge', in *Tractaat* (1679) B2.

⁶⁹ Jan Hendrik Glazemaker produced an excellent translation of Descartes' *Principia Philosophiae* (1644), transl. *Principia philosophiae of beginnselen der wijsbegeerte* (Amsterdam, 1657) and *Alle de Werke van de Heer Renatus Des-Cartes* (1661) noted for its precision and purity of the Dutch.

⁷⁰ Akkerman, *Studies*, 103.

⁷¹ From the publication dates of his translations, the translator can be identified as Heinrich Elias Hundertmark (1664-1739) who, after studying medicine in Leipzig, may have gained an understanding of Dutch while accompanying Heinrich, eighth count of Reuss, to the Netherlands. Hundertmark obtained his doctorate at Leiden and, on his return to Germany, became city physician in Zeitz, succeeding Johann Schreyer. *HBL* 2nd III, 341-2, lists the *Schmachtende Venus* as Hundertmark's own work.

⁷² N. Heinsius, *Schmachtende Venus oder curieuser Tractat von Spanischen Pocken oder Franzosen zum andernmahl gedruckt mit nützlichen Rezepten und nöthigen Lebens-Regeln vermehret* (Leipzig: Christoph Hülse, 1700; 1703) [not seen]. For the first edition, see *Cat. Universalis* (1699 II): N. Heinsius, *Curioser Tractat von Spanischen Pocken, oder insgemein so genannten Franzosen, nebst*

rendered its content ‘so wretchedly that from ignorance of our language he not only mutilated and distorted its true meaning but has also omitted many passages which he failed to understand’.⁷³ The disgruntled author felt obliged to publish a vindication entitled *Der gemarterte Venus Priester geheilet und gerettet*. Here Heinsius voices the same objections, adding that with ‘inborn effrontery’ this bad translator had had ‘the impudence to modify whole chapters and many *periodos*, even including recipes of concoctions and suchlike for barber apprentices by his own authority’. Heinsius refused to acknowledge both these publications as his own work.⁷⁴ He was also furious about the translator’s ‘equally wretched’ rendering of his *Nauwkeurige Verhandelinge van het Podagra* (1698)⁷⁵ and its ‘illogical and fatuous’ German title *Übel vexirter* [also translated as *verirter*] *und wohl soulagirter Podagrist*.⁷⁶ Were not his name appearing above the title, he protests, ‘I would not be able to recognize from its contents that I was the author of this work’.⁷⁷

Hundertmark had also produced a badly distorted version of Heinsius’s *Armamentarium Sanitatis* (1694),⁷⁸ so that the author was forced to have it correctly translated by a ‘High-German, no less experienced in the Low-German [i.e. Dutch] language’ and, in 1707, republished for the third time. Prior to his incompetent translation attempts, this ‘impertinent’ physician had, in 1698, asked Heinsius to send him his remedies for venereal disease which were dispatched to Zeitz with the post wagon via Halle in Saxony. The success of Heinsius’s cure induced him to sell

einem Anhang unterschiedlicher Anmerkungen von denen an dieser Kranckheit glücklich curirten Patienten (Leipzig: Thomas Fritsch, 1699).

⁷³ N. Heinsius, *Zeug-Hauß der Gesundheit, bestehend in lauter fürtrefflichen Geheimnissen*, 3rd edn. (Amsterdam, Danzig, Leipzig, 1707) 172-5.

⁷⁴ N. Heinsius, *Der gemarterte Venus Priester geheilet und gerettet. Oder eine genaue Verhandlung von der Venus Kranckheit Begreifende deßen erste principien, und verderblichen Fortgang in dem Geblüthe, als auch wie schädlich das Salivieren, unmäßige Schwitzen, und offmähliges Purgiren in dieser Kranckheit sey* (Amsterdam, Frankfurt, Leipzig, 1711) Preface.

⁷⁵ Earlier published as N. Heinsius, *Curioser Tractat vom Podagra und der allgemeinen Gicht* (Leipzig: Fritsch, 1699) [not seen].

⁷⁶ Second edn.: N. Heinsius, *Übel-vexirter und wohl-soulagirter Podagrist, Oder Curiöser Tractat Vom Podagra Und der allgemeinen Gicht, Worinnen Dieser schmerzlichen Kranckheiten Natur und Cur, Mit vielen bewährten Recepten und entdeckten Geheimnissen gründlich gewiesen wird* (Frankfurt, Leipzig: Christoph Hülse, 1701; 1703) here 1703 edn.

⁷⁷ Heinsius, *Zeug-Hauß der Gesundheit* (1707) 179.

⁷⁸ Earlier editions: N. Heinsius, *Waffenhaus der Gesundheit* (Leipzig: Fritsch, 1695); 2nd edn.: *Zeug-Hauß der Gesundheit bestehend in lauter fürtrefflichen Geheimnissen* (Leipzig: Fritsch, 1698; 1699) [not seen].

them under his own name, boasting about his competence, and palming off a weak self-fabricated concoction as Heinsius's 'tinctura antivenera'.⁷⁹

Works like Blankaart's *Borgerlyke Tafel* (1683), or *Hoechst nützliches und zu einem langwirigen Leben anleitendes Speise- und Tisch-Buechlein, Wie man ohne Krankheit leben könne, nach Teutschlandes Gelegenheit mit Fleiss eingerichtet*, though tailored to a German readership and interspersed with the translator's commentaries on diet and the new beverages tea, coffee and chocolate, on tobacco, on the reform of apothecaries by Dutch physicians, and the compiling of a medicine cabinet in every household with useful remedies to be ready at hand in emergencies, are, at same time, more faithfully rendered. The German translator, Georg von Keyl (Cunaeus), himself a physician, recommends it as a reference book because it is 'impossible to consult a good, experienced and conscientious *Medico* at any time [...] about healthy food and food to be avoided'.⁸⁰ Educating the wider public in matters of health and life-style was part of the medical reform programme Bontekoe and his allies pursued, considering it their duty to withhold nothing from the general public that could be of benefit to people's health.

v) Controversial Strategies

Medical issues, like the question whether the age-old practice of blood-letting was useful and necessary, described as among the '*dubiis vexatis* of our time', became increasingly also the concern of the lay public. Thus, the (unnamed) translator of a Latin treatise on the use and abuse of blood-letting by Stahl claimed, 'as it has nowadays become *grand mode* that not only distinguished and learned people but women also wish to reason [*raisonnieren*] about political and theological as well as medical matters', a German translation was 'all the more essential so that people

⁷⁹ Heinsius, *Gemarterte Venus-Priester* (1711) Preface.

⁸⁰ Blankaart, *Speise- und Tisch-Buechlein* (1695) Dedication; See below, ch. V, 182-3, ch. VI, 199, 201, 204.

get the right idea about it'.⁸¹ Melchior Friedrich Geuder, learned city physician of Stuttgart with a number of Latin publications and translations to his name,⁸² is a good example of a medical author generally opposed to the use of German for medical subjects but who, in one particular case, felt obliged to publish in the vernacular for reasons of self-defence and so as not to leave uncontested among a wide readership opinions of an adversary he considered unjustified and dangerous.

In his riposte to a German treatise by Gehema of 1688, a much disputed and vitriolic attack on the 'cruel medical murder-methods blood-letting, cupping, purging, enemas, juleppen and collapse-provoking heart-tonics with which unscrupulous physicians and healers (unworthy practitioners) assist so many thousands of innocent people to go wretchedly from life to death, conscientiously put before the eyes of all sensible people',⁸³ Geuder combats 'dubious notions' among the public and seeks to redeem the 'honour of our Noble Medicine and of so many brave medical men'.⁸⁴ Like Gehema, he states his intentions on the title page, reversing Gehema's *Grausame Medicinische Mord-Mittel* into *Heilsame Medizinische Lebens-Mittel* by explaining the 'necessity, proper usage and benefit resulting therefrom'. He justifies using German on the unavoidable grounds that Gehema had done so and because his treatise had in the meantime been 'selling strongly and in some quarters been received with a fair amount of applause'.⁸⁵

Gehema's treatise with its sensational title deliberately targeted the broader

⁸¹ Stahl, *Gründliche Abhandlung* (1734) Translator's preface, A1-2.

⁸² Of Geuder (d. end of 17th cent.) it is only known that he was born in Nördlingen, studied medicine at Altdorf and Tübingen, and translated into Latin the *Osteologia nova* by the English anatomist Clapton Havers (Leipzig, Frankfurt, 1692 [1691]) and the *Nouvelle anatomie raisonnée* [...] (Ulm, 1693; 1694 [1690]) by the French anatomist Daniel T. Sauvage. See *HBL* 2nd III, 93-4.

⁸³ J. A. Gehema, *Grausame Medicinische Mord-Mittel, Aderlasse, Schröpfen Purgiren, Clystiren, Juleppen und Ohnmacht-machende Hertzstärckungen Wodurch Unbedachtsame Genees- und Heilmeister (nicht rechtschaffene Practici) so viel tausend unschuldige Menschen jämmerlich vom Leben zum Tode helfen. Stellet allen vernünftigen Leuten gewissenhaftig für Augen [...]* (Bremen, Frankfurt, Ulm 1688; Bremen, Rostock, 1689; Leipzig, 1714; Dutch transl.: The Hague, 1690) here 1980 facs. of 1688 edn..

⁸⁴ F. M. Geuder, *Heilsame Medicinische Lebens-Mittel Denen grausamen Medicinischen Mord-Mitteln Herrn D. Jan Abrah. à Gehema Entgegen gesetzt. Oder Gründlicher Bericht Von Denen von Hn. D. Gehema Sehr verschreyten und verworffenen Mitteln, In welchem deren Nothwendigkeit, rechter Gebrauch, und darauß erwachsender Nutzen vorgestellt* (Stuttgart: Georg Wilhelm Kühn, 1689; Ulm 1691) here 1980 facs. of 1689 edn., Preface, B2.

⁸⁵ Geuder, *Heilsame Medicinische Lebens-Mittel* (1980[1689]) B2.

literate lay public, as is obvious from his choice of language and translation of his Latin quotations. If Gehema had addressed specialist circles in Latin, in Geuder's opinion there would probably have been no reply since no-one would have taken his 'disparaging criticism' seriously. A lay readership, however, not sufficiently aware or informed of the medical issues presented by Gehema in 'such a cruel and odious way', might acquire 'adverse ideas about upright physicians likely to use those methods rejected by him, especially where, for instance, a patient dies due to his particular condition rather than because this or that method has been employed'.⁸⁶

Thomas Gloning and Jan Lüsing, in their recent detailed analysis of Gehema's and Geuder's strategic use of language and argument, show how in this encounter both experts are attempting to convince the non-expert public of the validity of their respective theses. The controversy offers a vivid and detailed picture of the state of scientific knowledge at the time, methods of scholarly debate and patterns of medical practice. The global textual structure of the two texts conforms to the traditional pattern of waging polemics via pamphlets and includes characteristic elements of the confrontation between the modernist (Gehema) and the traditionalist (Geuder) which are found in many seventeenth century controversies.⁸⁷ Both contestants cite various publications of medical authorities to further their own claims. For the benefit of the lay reader, both Gehema and Geuder translate Latin passages quoted in support of their argument into German. On the one hand, the use of German translations enables the non-expert reader to understand the Latin quotations, on the other, by citing medical authors also in the original, Gehema and Geuder not only identify themselves as learned physicians but imply the higher scholarly status of the Latin original.⁸⁸

The ensuing controversy well illustrates the difficulty contemporaries encountered in finding apt German equivalents for technical medical terms in Latin. Explanations are often given by first stating the Latin word and then the German expression, for example 'microscopia' or 'Vergrößerungs-Gläser' [magnifying

⁸⁶ Geuder, *Heilsame Medicinische Lebens-Mittel* (1980[1689]) B1-2.

⁸⁷ Thomas Gloning and Jan Lüsing, 'Die Kontroverse zwischen J. A. Gehema und M. F. Geuder (1688/1689)', in *Controversies in the Republique Des Lettres*, Technical Report 3: *Scientific Controversies and Theories of Controversy* (2002) 87-142, here 88-9.

glasses] but, due to the nature of the controversy, a sprinkling of Latin terms within the text remained unavoidable. The strategy of vernacularization, the explanation of specialist terms, is not altogether consistent and Latin or other technical terms are not infrequently left unexplained.⁸⁹ In his translation of Latin passages into German, Gehema stretches the significance of certain words for his own purposes. Thus, quoting Van Helmont, he translates *rectè ergo maligna statuuntur omnia propriè dicta purgantia*, designating all purgatives as ‘malignant’, as ‘all so-called purgatives are justly deemed evil murder methods’ [böse Mord-Mittel] (1688, p. 37). Relating German expressions to the technical terms of Latin-dominated medicine thus carried the risk of misinterpretation and misunderstanding. Geuder, for example, considered it necessary to clarify to himself, as well as the reader, Gehema’s meaning in rendering the medical term *febres intermittentes* as ‘abgehende Fieber’: in his rejoinder he reverts, by way of explanation, to using the term ‘intermittentes’ [intermittent] (1689, p. 38).⁹⁰

To heighten the impact of their arguments on the lay readership, Gehema and Geuder both resort to the frequent use of vivid analogies from everyday life in order to make the discussion more transparent to lay readers largely unfamiliar with specialist medical knowledge. Gehema, for example, emphasizes the irrationality of blood-letting by likening it to the absurdity of trimming one’s feet if the shoes are too small (p. 3).⁹¹ Elsewhere, he ridicules the assumption of the fermentation of the blood, deduced from the force of its ejection during blood-letting, by comparing this to ‘someone urinating and then concluding from the force of the spray a fermentation in the bladder, thereby failing to understand the mechanical laws of the *Oeconomia animalis*, nor grasping that the jet stream of the blood during blood-letting originates from the contraction of the heart, arteries and veins’ (pp. 8-9).⁹²

Devaluing and undermining faith in older medical knowledge and assumptions is, in fact, an integral aspect of Gehema’s reform strategy. In his perception of himself as one of the Cartesian medical reformers, his declared task is to change the

⁸⁸ Gloning and Lüsing, ‘Kontroverse’, 103, 116-18.

⁸⁹ Ibid., 103-4.

⁹⁰ Ibid., 104.

⁹¹ Ibid., 114.

thinking of the wider lay public as much as transform the ideas of the medical profession itself. The style of Gehema's denunciation of the old authorities is less one of detailed examination or discussion of older medical theories than a rhetorical attack and 'global disparagement of persons'.⁹³ For Gehema, Aristotle, Hippocrates, Galen, and Avicenna are 'Greek and Arabic dreamers' (preface), the remedies of the 'idolatrous' Galen are 'Galenic soups' (p. 62). Traditional medical theories are 'disgusting blunders of the Greek and Arabic fable-vendors' (p. 63), and blood-letting he calls the 'murder method of the heathens, Greeks and Arabs' (p. 32).

A major aspect of the argument is the issue what kind of authority can justly be invoked. Gehema, the Cartesian modernist, dismisses appeals to classical authorities as misplaced and likely to be dangerous while he himself cites modern authorities and promotes their reputations by referring to 'the great Helmont' (p. 11), 'the widely renowned Professor Waldschmidt' and the 'well-considered, rational method' and splendid cures of the 'upright Dutch *practicorum*' Bontekoe, Overkamp and Muys (p. 20). In contrast, Geuder, with his greater appreciation of the older authorities, tries to rescue their standing while contesting Gehema's estimate of the moderns, at one point quoting a letter from Waldschmidt to Dolaeus about the necessity of purging which Gehema in part misrepresented.⁹⁴ Where Gehema opts for sweeping reformation and innovation and wholesale rejection of the past, Geuder seeks to steer a more moderate course. He prefers to defend the old medicine in so far as it has not been disproved and is willing to give up the old only where the evidence of the new requires it.

From his self-perception as an intrepid defender of truth and certainty, Gehema oversteps the usual boundaries within which scientific controversies were discussed at the time. Like Bontekoe, he acts like a self-appointed judge over the issues in dispute and in his disparagement of opponents. Presenting himself as a follower of the 'newest medical reformers' he thanks God for the blessing of enlightenment ['Erleuchtung'] (p. 74-5) and vows to continue in his intercession until the deluded desist and his own point of view prevails: 'For as long as you don't stop torturing,

⁹² Gloning and Lüsing, 'Kontroverse', 115.

⁹³ Ibid., 117.

tormenting and tyrannizing over your patients, I will not stop, or tire of, proclaiming the truth and writing against you.' (preface).⁹⁵

I thank GOD that he has opened my eyes, removed the shameful prejudices from my mind and, in his mercy, enables me to cure the patients entrusted to my care in a short, pleasant and conscientious way; Yes, I thank GOD that he also rouses diligent *practicos* in various places from the deep sleep of ignorance and wrong thinking and leads them to the light of truth; as, among others, happened to the famous Dutchman Dr. Blanchard which he acknowledges in his *Idea nova Praxeos Medicae* (p. 21).

Gehema's quasi-religious fervour leads him to see his Cartesian standpoint as a kind of revelation which interposes an immense distance between the old medicine and the new with its emphasis on reason and experiment. Especially striking is his comparison of the medical reform project he and others advocate with Luther's Reformation in religion and theology, as Bontekoe does also,⁹⁶ stylizing his medical heroes and himself as 'liberators, rescuers, and preachers of redeeming doctrine'.⁹⁷ In Gehema's view, Descartes, Van Helmont and Bontekoe are the 'foremost and only true reformers of philosophy and medicine', as decisive in reshaping the changes in philosophy and medical thinking as the Protestant reformers had been in the religious sphere,⁹⁸ a claim firmly rejected by Geuder who argues Descartes was not the first to reform philosophy and science but that before him Francis Bacon had 'broken the ice'(preface) - an illustration of the tension in late seventeenth century German culture between the Cartesian stream in philosophy, science and medicine and the more empirical approach deriving from England. Opponents are viewed from Gehema's perspective as obdurate, misled and lacking in understanding which, in his eyes, justifies using vehement diatribes for which Bontekoe was also notorious. For further justification, he cites the maxim, 'Crescentibus delictis, crescunt poenae', which he translates as: 'Je mehr das Böse zunimmt, je heftiger muß man es

⁹⁴ See below, ch. VII, 243-4.

⁹⁵ Gloning and Lusing, 'Kontroverse', 112.

⁹⁶ See, for example, Bontekoe, 'Apologie', in *Tractaat* (1679) 346.

⁹⁷ Gloning and Lusing, 'Kontroverse', 115.

⁹⁸ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) Dedication, 3a, 4, Preface, unpaginated.

bestraffen' [The more evil increases, the more severely it must be punished] (preface).⁹⁹

Geuder, for his part, objects to Gehema's violations of the normal rules of courtesy and scholarly discourse, of logical and dialectical correctness and proof, accusing him of inappropriate generalizations with his 'all too harsh, all too insulting formulations', and use of words like murder methods and blood-spillers (preface).¹⁰⁰ In any case, in Geuder's view, Gehema's critique, though partly valid, was no longer particularly relevant since much of the medical practice he so severely criticized had, in recent years, already been amended or discarded. Adherence to Galen, for example, was no longer as dogmatic or rigid as it had been a century earlier (pp. 39, 61, 81).¹⁰¹

vi) Gehema – A Medical Reform Publicist

In Germany, no greater supporter, and conveyer into the German context, of the reforming ideas of Bontekoe, Overkamp, Blankaart and Muys could be found during their own time, or later, than Janusz. Abraham Gehema (1647-1715). The Danzig-born son of Abraham Jakobson, an ennobled Polish official of East-Frisian origin (Emden), chief administrative officer and royal chamberlain to the King of Poland, Janusz. Abraham, from the age of fourteen, served in the Polish army as well as with foreign troops first as a common soldier, then corporal, captain, and, finally, cavalry captain. In 1672, his military service took him to Holland, where he resigned his commission as cavalry captain to study medicine at Leiden, Groningen, and Utrecht.¹⁰² At Utrecht he also studied philosophy under the Cartesian Henricus Regius. Gehema adopted Descartes' philosophy and the iatrochemical theories of Dele Bøe Sylvius and became a fervent advocate and personal friend of Bontekoe with whom he lived 'in great familiarity' [in grosser Familiarität] for some time in

⁹⁹ Gloning and Lüsing, 'Kontroverse' 101, 113.

¹⁰⁰ Ibid., 113, 124-30.

¹⁰¹ Ibid., 118, 122, 129.

¹⁰² Schneppen, *Niederländische Universitäten*, 113.

Hamburg, in 1683,¹⁰³ and who healed Gehema of a skin disease that had troubled him for several years.¹⁰⁴ After obtaining his doctorate in Königsberg (1678), Gehema practised in Groningen (1678), Danzig (1679), Königsberg (1681), and Hamburg, served as military doctor in the Polish (and later Danish) army, was at one time councillor and physician in ordinary to the Polish king and, from 1688-95, court physician to the Duke of Mecklenburg, and then, from 1695, *Hofmedicus* in Berlin, as well as *Fiscalis des armes* (1703). He died in Stettin, in March 1715.¹⁰⁵

Gehema is now chiefly known for his literary campaign to reform army medical services whose great deficiencies he had formerly observed during his nineteen-year military career in various armies.¹⁰⁶ In several tracts concerning army health provision Gehema was the first to vividly highlight the fact that military effectiveness was being greatly impaired by the wholly inadequate care provided for the sick and wounded, pointing out that it was far better to preserve trained men than replace them with new recruits. As the main causes of the deplorable state of military medicine he identified the gross shortage of medical staff (generally only one *Medicus de cornu* and a barber ‘surgeon’ [Feldscherer], to a force as large as 20,000–30,000 soldiers), the abysmal training and inexperience of the latter, the rough and ready, and often wrong, treatment of the wounded and sick without forethought, consideration, or trained medical guidance, and inadequately stocked medical chests for which each soldier (ironically) had to pay an army-penny.¹⁰⁷

¹⁰³ J. A. Gehema, *Zwey und zwanzigjährige Bewährte ohnfehlbahre Fieber-Cur, Ohne Aderlassen, purgiren, vomiren, schwitzen, und Juleppen, alle Febres intermittentes [...] zu curiren* (Berlin, 1702; 1753) here 1702 edn., A4.

¹⁰⁴ J.A. Gehema, [...] *Van de ziekte gemeenelijk genoemt de Poolsche Vlecht, Aen den Voortreffelijken Man Den Heere Kornelis Bontekoe, Hersteller van de oude en nieuwe Filozofie, eertijds in Holland, nu te Hamburg voornaam Geneesoeffenaer* (Dordrecht, 1683).

¹⁰⁵ Albert Koehler, ‘Janus Abrahamus à Gehema’ in *Archiv für die Geschichte der Naturwissenschaften und der Technik* VI (1913) 222-8; Stanislaw Schwann, *Janusz Abraham Gehema* (1648 [sic. i. e. 1647]-1715) (1959) 61-2. Of various consulted sources, Koehler (1913) and Schwann appear the most reliable about Gehema’s successive career moves.

¹⁰⁶ Schwann, *Janusz Abraham Gehema*, 50 notes 1 and 2; *HBL* 2nd II, 706; Albert Köhler, ‘Geschichte des Militärsanitätswesens und der Kriegschirurgie vom 16. bis zum 20. Jahrhundert’ in Max Neuburger and Julius Pagel (eds.), *Handbuch der Geschichte der Medizin*, 3 vols. (Jena, 1905) III 853-77, here 857-60.

¹⁰⁷ Gehema, *Wohlversehener Feld-Medicus* (1684) 23-34; J. A. Gehema, *Der krancke Soldat, bittende Daß er hinfuehro besser möge conserviret, mitleidiger tractiret und vorsichtiger curiret werden* (Stettin, 1690) largely unpaginated. Further publications include J. A. Gehema, *Officirer Feld-Apotheke, woraus ein jeder Officirer [...] im Nothfall bey allen Kranckheiten und Blessuren [...] sich selbst curiren könne* (Berlin, 1688); J. A. Gehema, *Wohleingerichtete Feld-Apotheke* (Bremen, 1688).

In this period all the armies in northern Europe were undergoing major changes in organization, as well as expansion. Brandenburg-Prussia, for example, until the 1650s, had no professional standing army, but between then and the end of the seventeenth century, the Elector, with considerable success, constantly strove to improve the organization (generally with Dutch and Swedish models in mind), as well as the size, of his standing force.¹⁰⁸ Opgenoorth noted that, ‘a large part of the leadership of the Brandenburg army then being formed was indeed drawn from Dutch service, especially in the 1640s and 1650s’.¹⁰⁹ As a result, quartering troops, military health care, and sanitary conditions, for the first time became a concrete concern of the Electoral government at a juncture where Dutch experience had a particular relevance to the development of the Brandenburg-Prussian state, though the practical realization of Gehema’s criticisms were only very gradually instituted in the course of the eighteenth century and beyond.¹¹⁰ Next to his specific advice for army medical reform, Gehema, stressing the divided state of medical opinion and the many sects of healers, commends the surgical tracts of Bontekoe, Overkamp, Muys, Blankaart and Daelmans as the best basis for sound health care in the field.¹¹¹

In his own time Gehema was also noted for his contentious publications on blood-letting, purging, and apothecary reform, as well as for his treatises on fevers, gout, tea, diet and healthy living, and on the ‘best pastime’ - the striving for self-knowledge.¹¹² His numerous works (45), written mostly in German, with some translated into Dutch, were published in Hamburg, Bremen, Stade, Glückstadt, Rostock, Frankfurt am Main, Berlin, Stettin, Leipzig, Dresden, Ulm, Cassel, Basel, The Hague, and Dordrecht, thus reaching a broad audience. By 1689, Gehema claimed to have made his name in the scholarly world through writing ‘twenty-nine treatises to date’ and dedicated his talents, ‘undaunted, and with the greatest endeavour, to contribute to the construction of the new medicine’, in his view

¹⁰⁸ Koch, ‘Brandenburg-Prussia’, 139-40.

¹⁰⁹ Ernst Opgenoorth, ‘Johan Maurits as the Stadholder of Cleves under the Elector of Brandenburg’, in E. van den Boogaart (ed.), *Johan Maurits van Nassau-Siegen 1604-1679* (1979) 39-53, here 47.

¹¹⁰ Julius L. Pagel, *Die Entwicklung der Medizin in Berlin von den ältesten Zeiten bis auf die Gegenwart* (1897) 13; Köhler, ‘Geschichte’, 860-77.

¹¹¹ Gehema, *Wohlversehener Feld-Medicus* (1684) 9, 34-62; Gehema, *Krancke Soldat* (1690) [unpag.].

¹¹² J. A. Gehema, *Die Beste Zeitvertreib* (Bremen, 1689; Dutch transl.: The Hague, 1691).

already firmly based on the foundations of the new Cartesian philosophy.¹¹³ He tirelessly fought for an enlightened philosophical approach to medicine and healthy living, and like Bontekoe, vehemently opposed blood-letting and purging and strongly recommended tea and coffee, as well as tobacco, as ‘vigorous aids to continual health’.¹¹⁴

Like Bontekoe, Gehema was cynical about the motives of many physicians and apothecaries for resisting reform, attributing much of the opposition to arrogance, prejudice, and a desire to profit from patients’ illnesses rather than cure them.¹¹⁵ A major fault, observed during many years of medical practice and extensive travels through large parts of Europe, was that patients, as well as medical practitioners, rejected the ‘right approach to attaining a true philosophy, as proposed by Descartes, and instead gambol, as it were, around their idolatrous golden calves, the pagan Aristotle and the blasphemer Galen’.¹¹⁶ Those who ridiculed and opposed ‘Descartes, Malebranche, Poiret, Cordemoy and others in philosophy, Cocceius, Heidanus, Momma, Wittichius, van der Wayen in theology, and Bontekoe, Overkamp, Majis [Muys?], and others, in medicine and surgery’, in his view, ‘trifle away their time with useless chatter and vain efforts’.¹¹⁷ Most university-trained physicians, assuming they had ‘swallowed all wisdom’, put studies aside as soon as they began medical practice and, content with what they had heard from their professors, neither examined the truth themselves nor wished to converse with those who worked ‘day and night’ to discover it. If a *medicus* equipped with better principles suggested a faster, surer and more pleasant method of cure and how to preserve the body against illness, he was ‘soon maligned and ridiculed, for whatever is not written by the pretentious waffler and fable-seller Galen, is deemed unreliable’. Equally at fault were ‘stubborn, self-indulgent, or miserly patients who want to be cured after their own preconceived ideas, let old hags, know-all ignorant bath-mothers, and blabbering blood-letting barbers or other bunglers, mess things up

¹¹³ Gehema, *Beste Zeitvertreib* (1689) Preface 4.

¹¹⁴ A. J. Gehema, *Der Richtige und sichere Wegweiser zur Beständigen Gesundheit und einem langen Leben* (Alten-Stettin, 1691) D2.

¹¹⁵ Ibid., A; Bontekoe, *Kurtze Abhandlung* (1686) 463.

¹¹⁶ A. J. Gehema, *Edler Thee-Tranck, Ein Bewehrtes Mittel zum gesunden und langen Leben* (Bremen, 1686) Preface.

and then expect any physician to sort them out beyond reproach and with the first recipe working on the spot'. Not knowing the true method of living in good health and without pain, they rather drank 'harmful juleppen, sour and blood-corrupting Rhine wine, bowls full of sweetened putrid almond- and so-called pearl-milk instead of tea'.¹¹⁸

Gehema wholly rejected the claim that with Bontekoe's and his own healing methods just as many, if not more, people died. A much likelier cause, in his view, was the 'intentional and stubborn adherence to the old methods because one would begrudge foreigners like Descartes and Bontekoe the honour of having academic institutions run according to their principles'. Equally, older medical professionals would not want to stand corrected by young practitioners and 'neoterics'. According to Gehema, many courageous physicians, however, including Johann Jacob Waldschmidt, thought quite differently. They had not only adopted the new principles but, like Gehema himself, successfully practised them daily in their healing methods.¹¹⁹

Gehema contends that as soon as Theodor Craanen, and after him Bontekoe, Overkamp and Blankaart, began to lay down guidelines for a new medicine based on reason and experience and introduced genuine remedies, attracting eager followers, 'such a riot broke out among the scholars that one could hardly describe it'. These men were branded as 'atheists' and evoked great hatred because they no longer believed everything Aristotle taught and supported a new philosophy which explained the effects of all physical things through their movement, size and shape; because they attributed thought to the soul as its unique function and whole substance, and believed that life and health consisted of the unrestricted flow of the body fluids.¹²⁰ Pointing to Bontekoe's successful cures at The Hague, Amsterdam and the Brandenburg court, and his own thriving practice for seven years after Bontekoe's method, Gehema was convinced that 'Aristotelian and Galenic murderous thugs' could no longer assail the new medicine, now firmly based on

¹¹⁷ Gehema, *Beste Zeitvertreib* (1689) 5.

¹¹⁸ Gehema, *Edler Thee-Tranck* (1686) Preface.

¹¹⁹ J. A. Gehema, *Vertheidigter Reformirter Apothecker, wider Anonymum Grobianum oder verummerten Ninorigum Schadgehemium* [...] (Freystadt, 1690) 47-8.

philosophy and physics and the many advances in anatomy and physiology, because ‘everything can be demonstrated with knives, syringes and microscopes’.¹²¹

But defective translations could lead to misunderstandings. For example, Bontekoe’s Dutch statement ‘dat Caneel en Ambra grys verstarcken’ [cinnamon and ambergris (Ambra grysea, or grey amber) reinforce] the effect of tea, had been mistranslated as ‘grys’ meaning ‘sand’, wrongly suggesting it increased calculi. According to Gehema, misinterpretations had also proved of ‘great disadvantage’ to Bontekoe’s hypothesis of the harmfulness of sour food and drink to health. His rationale for writing on tea in German was that, as Bontekoe’s good friend and thoroughly familiar with his ideas, he was a ‘more conducive medium for conveying them to the German nation’.¹²² Gehema was well aware of the drawbacks of translating medical books for an unsophisticated German readership. In his reply to a German anonymous author who attacked his *Reformierter Apothecker* (1688), as well as Bontekoe’s writings, accusing him of many misleading errors and Gehema himself of following too closely in Bontekoe’s footsteps, Gehema vigorously defends Bontekoe, stating that the learned are well able to interpret his views correctly, whereas the unlearned who have not been taught good principles cannot possibly grasp them. Instructing them in these matters would be reprehensible foolishness. For that reason, Gehema objected to the translation of Bontekoe’s *Neues Gebäude der Chirurgie* into German (1687) ‘because the German reader has neither read, nor understands, the Cartesian philosophy’. Thus a ‘simple-minded’ German who read Bontekoe’s opinions, and the charges brought against them, might think Bontekoe was a ‘queer fish or some kind of heretic’ because he had never encountered such reasoning. The Dutch, in whose language Bontekoe’s *Nieuw Gebouw* was written, were a completely different case, having been ‘blessed’ with a Dutch translation of Descartes’ philosophy many years ago.¹²³ Bontekoe’s ‘punishment’ of Dutch surgeons who, nevertheless, still adhered to ‘many

¹²⁰ Gehema, *Vertheidigter Reformierter Apothecker* (1690) 48-50.

¹²¹ *Ibid.*, 57-9.

¹²² Gehema, *Edler Thee-Tranck* (1686) 5.

¹²³ See above, note 69.

prejudices' was thus all the more justified. His sole intention of eliminating persistent ideas about 'nature', elements, temperaments, spirits and faculties' was to free them from such *ignorantiae asyla* [asylums of ignorance] and make them see reason.¹²⁴ To Gehema, described by Haller as a 'Cartesianae sectae addictissimus',¹²⁵ the Cartesian philosophy was, however,

of such great consequence, that it should be fair-mindedly cultivated by all social orders, guide all actions of the high and low, learned and unlearned, old and young, and (after the example of the Dutch and French), preferably in the vernacular. Indeed, a great part of our Christendom and divine service depends on such a philosophy. It then becomes [...] a means of knowing oneself, of exploring the truth of all things which ultimately leads to God and knowledge of God [...] and shows us the way to direct our minds away from material things, and the longer the more to aim for truth.¹²⁶

He therefore dedicated his works not just to dukes and princes but also to church ministers, burgomasters, councillors, lawyers, lay judges and aldermen who might spread his ideas. A noticeable element of tension in his writing is his obvious enthusiasm for propagating the new medicine in the vernacular, on the model of various Dutch and French writers, combined with strong doubts as to the wisdom of confronting the German lay reader, not previously exposed to Cartesian ideas, with the new Cartesian outlook. Thus, Gehema in places appears to be among those who thought that for German consumption the more specifically medical aspects should be detached from the wider Cartesian philosophical framework. Gehema's reservations about their reception by German readers did not, however, deter others from translating and propagating Bontekoe's books. Their popularity is attested to by the translator of Bontekoe's *Grundsätze der Medizin* (1691), only known by his initials H.H., who refers to their outstanding success and 'incalculable sales', not only in Dutch but also Latin and German. 'Reprinted and republished many times', they were 'so well known and popular that his views have met with the approval of

¹²⁴ Gehema, *Vertheidigter Reformirter Apothecker* (1690) 22-3.

¹²⁵ Koehler, 'Janus Abrahamus à Gehema', 223.

¹²⁶ Gehema, *Beste Zeitvertreib* (1689) Dedication.

most people', many books written in or translated into German being, in his opinion, not of such great value as Bontekoe's.¹²⁷

It was the popular appeal of Bontekoe's and Blankaart's books in German translation that induced Johann Georg Hoyer (1663-1737), physician at Mühlhausen in Thuringia,¹²⁸ to translate Friedrich Hoffmann's 'proper investigation of acid and mucus, in which the new propositions of the very famous Doctors Bontekoe, Blankaart, and others, are thoroughly refuted and it is maintained that not all diseases and ailments of the human body stem from acid and mucus'.¹²⁹ Hoyer, obviously not in agreement with Bontekoe and his allies, translated Hoffmann's 'irrefutable reasons' so that also those unable to read Latin could 'abandon the misconceptions of Bontekoe etc.', and in order 'to render more readily objectionable and questionable the deceptive applause which the reputed originators of the new proposition of acid, mucus and alkalis have been winning for some years'. According to Hoyer, their many publications, and those of Gehema, written with 'extraordinary *hardiesse* and presumptuous authority', had found so many followers, 'especially among half-learned physicians and empirics', and their works had 'got so out of hand that almost all bookshops are full of them, yes, even barber apprentices want to reason about *acido* and *alkali*, so that such things are well nigh better known than Aristotle's theory of the four elements'. Were the 'great abuse' and 'many fallacies' originating from such propositions discovered, and likewise revealed in the German language, Hoyer hoped that 'this junk could as suddenly fall as it has arisen'.¹³⁰

It is obvious, however, that rejection of Bontekoe's writings in particular partly stems from the abrasive manner with which he berated his medical colleagues in Dutch and German translation. It seems that Bontekoe would have had fewer

¹²⁷ C. Bontekoe, *Grundsätze der Medizin oder die Lehre vom Alkali und Acido durch Würckung der Fermentation und Effervescenz* (Bremen, Frankfurt, Leipzig 1691) Preface, unpaginated.

¹²⁸ Hoyer studied medicine at Jena, practiced in Mühlhausen and, between 1689-1694 in Copenhagen, Holland and England. In 1694, he obtained his doctorate in Halle, became medical officer at Mühlhausen and, in 1695, a member of the *Academia Caesareo-Leopoldina*. See *HBL* 2nd III, 361.

¹²⁹ Friedrich Hoffmann, *Eigentliche Untersuchung Der Säure und des Schleimes, Worinnen Die von denen hochberühmten Doct. Bontekoe und Blanckard und andern mehr bißhero auffgeführte Lehr-Sätze gründlich widerleget sind, und hingegen behauptet wird Daß nicht alle Krankheiten und Gebrechen Menschliches Leibes von Saur und Schleim herrühren* (Halle, 1696) Translator's preface.

¹³⁰ *Ibid.*, 2-3.

adversaries, had he been less inclined, as Hoyer himself admits, ‘to right away belittle and disdain those who do not share his views, and with derisive talk and opprobrious writings seeks not only to rob them of their good reputation but to deprive patients and the poor infirm, much to their great detriment, of certain aids which for many hundreds of years have been in daily use with huge benefit’.¹³¹ Much the same was said of Gehema by Geuder.¹³² In Hoyer’s view, ‘if now a Bontekoe disciple wants to decry blood-letting as a cruel medical murder method, and those who sometimes advise it, as murderers, he really goes too far with unjustifiable audacity and deserves to have his overly sharp pen a little blunted’.¹³³

vii) German and French Allies

Johann Caspar Reiß, an acquaintance of Gehema,¹³⁴ is a good example of someone trained ‘after the old method’ who as a field surgeon in various regiments, and during his successful ten-year practice in Augsburg, had rejected Bontekoe’s ideas as incomprehensible ‘peculiar fantasies’. But after reading his works several times, and acquiring all the authors who discussed the new principles, Reiß declared himself ‘beaten’ and ‘felt compelled to ask Bontekoe’s forgiveness a hundred times’. Before fully accepting the new principles, Reiß re-read the old medical authors and found that while he could learn something from each (specially good healing methods), due to an uncertain and often wrong anatomy, and in particular ignorance of the circulation of the blood and body fluids, surgery, especially theory, was based in many ways on false principles. According to Reiß, the ‘tireless’ Bontekoe was the first to dare dismantle the old medicine and construct a new medicine and surgery, for which he was persecuted, maligned and belittled as one who wanted to spread a new heresy in medicine. Yes, he would have become a victim of the Inquisition,

¹³¹ Hoffmann, *Eigentliche Untersuchung* (1696) Translator’s preface, 3.

¹³² Geuder, *Medicinische Lebens-Mittel* (1980[1689]) A2, A4, A5.

¹³³ Hoffmann, *Eigentliche Untersuchung* (1696) Preface, 3.

¹³⁴ Gehema, in his *Zwey und Zwanzigjährige Fieber-Cur* (1702) B3b, refers to Reiß as one of the surgeons stocking his ‘unfailing’ fever cure.

asserts Reiß, had not his successful practice given him many great patrons, in particular the Great Elector of Brandenburg. Reiß claims to have based his surgical practice over the past thirty years on Bontekoe's publications and presents the latter's *Grundsätze der Medizin* as a key to his own *Compendium Chirurgicum* and to the works of 'Overkamp, Blankaart, Muys, Daelman, Junkens and Gehema', encouraging all surgeons to emulate these great men towards the perfection of surgery.¹³⁵

Johann Helfrich Jungken (or Jüngken; 1648-1726), a sought after physician and surgeon, was also a prolific writer whose medical, surgical, gynaecological, chemical, pharmaceutical and balneological works in numerous editions in Latin and German, although not of exceptional merit, were very popular in his time.¹³⁶ A self-proclaimed Eclectic, books like his *Fundamenta medicinae modernae eclectica* (1693) based on Cartesian physics,¹³⁷ which found the approval of the famous Johannes Bohn in Leipzig and of Georg Wolfgang Wedel in Jena,¹³⁸ reflect his Cartesian leanings and Sylvian-Bontekoean ideas of health and illness, though, unlike Bontekoe, he did not regard the *Scharbock* as the source of all, or most, diseases. In true Cartesian fashion, Jungken believed the human body was no longer a 'confusum chaos' but a God-created machine, functioning in the same way as a well-made clock, and to be understood 'no differently than a water feature equipped with specific pumps, pipes and canals that compress and drive the water up high mountains'. It was not qualities and faculties that mattered for the body's functioning but the correct composition and movement of solid and liquid substances, in which the soul had no part because 'body movement occurs without its direction'. The soul made man a human being, its function was to preside over, and direct, reason. It

¹³⁵ C. Bontekoe, *Grundsätze der Medizin und Chirurgie, oder die Lehre vom Alkali und Acido durch Würckung der Fermentation und Effervescenz* (Augsburg, 1721) Translator's preface, 8.

¹³⁶ ADB XIV, 726.

¹³⁷ Johann Helfrich Jungken, *Fundamenta medicinae modernae eclectica, Ubi Physices compendio praemisso, ad Cartesii potissimum mentem conscripto, ex celeberrimis neotericis scriptoribus medicis [...]* (Frankfurt am Main, 1693) [not seen]; See Albrecht, *Eklektik*, 366-8.

¹³⁸ Stolle, *Anleitung*, 366.

needed a healthy, well-functioning body, but the body did not need the soul in order to function.¹³⁹

Like Gehema, Jungken wrote in order to improve medical standards in Germany, ‘so many German medical books being on the market which do not mention even the most basic things and are of no use other than promoting the *Secta Empirica*’.¹⁴⁰ Like Bontekoe and his allies, he saw the disjunction between internal medicine and surgery as a severe disadvantage to a progressive, better medicine. In his view, every good physician should also have practical experience in surgery as in Hippocratic times. At the same time, surgeons should leave it to conscientious physicians to build on the true foundations of medicine, still in many ways based on conjecture, instead of meddling in the cure of ailments requiring thorough medical knowledge. The solution for a better medicine lay in the *studiosus chirurgiae* learning his *fundamenta* from the physician while the *medico* would be guided through surgical procedures by the master of surgery. Jungken dismisses the usual assumptions about the causes of disease and the quality of repelling, drawing, cooling remedies as ‘nothing but badly understood, wrong reasoning on which they base their practise’. The most important quality was the unhindered circulation of the blood, ensuring life and health. Could heat and cold pass as qualities? He believed ‘with Cartesius: NO’. As surgery was still taught according to the old erroneous principles, Jungken recommends reading the ‘excellent Bontekoe’s *Neues Gebäude der Chirurgie*, in which a truth-loving surgeon will find the old errors more vigorously anatomized than in any other place’.¹⁴¹

Like Bontekoe, Jungken used only very few medicines which he prepared himself, thought blood-letting only advisable in some cases, such as an ‘upsurge of blood caused by a irregular effervescence of its particles, thus increasing the volume

¹³⁹ Johann Helfrich Jungken, *Wohlunterrichteter Sorgfältiger Medicus, welcher nach denen Grund-Regeln so aus der heutigen Anatomie und Chimie hergenommen, alle Innere Theile des Menschlichen Leibes beschreibt, und dessen zufällige Kranckheiten getreulich abhandelt, dergestalt Daß ein jeder, der vor seine Gesundheit Sorge träget, so wol seine eigene Constitution daraus erkennen, als In anfallenden Kranckheiten sich selbst rathen und helffen kan* (Nürnberg, 1725) 2-4.

¹⁴⁰ *Ibid.*, Preface, 1.

¹⁴¹ Johann Helfrich Jungken, *Chirurgica Manualis, Oder kurtzer doch vollkommener Begriff, zu der Chirurgie in speciè gehörigen Operationen Oder Hand-Arbeiten, wie solche einem rechtschaffenen Chirurgo experimentaliter zu erlernen und zu wissen absolutè nöthig sind*, 4th edn. (Nürnberg, 1718) 2-5.

and dilating the blood vessels', to reduce a 'harmful plethora' causing severe headache, or other pains, to treat 'obstructed menses', a threatened miscarriage, cerebral stroke, or a bout of frenzy. He still saw some merit in cupping for an obstruction, and (despite arguments against their use from the 'newest medici'), in *setons* and *fontanellae* to extract the 'sour particles from the circulating humours'.¹⁴²

Jungkens' varied, successful medical career and popularity as a writer of medical books suggest that his views became widely known to many of his colleagues and patients. He is frequently mentioned among his medical contemporaries and can therefore be regarded as an opinion former of the period.¹⁴³

No less so was the much respected Hildesheim city physician **Johann Peter [Petrus] Albrecht** (1647-1724). As a member of the 'Naturforschende Gesellschaft' (*Academia Naturae Curiosorum*, later *Academia Caesareo-Leopoldina*), under the name 'Castor' (1681), he made many significant observations about various aspects of medical practice, published in the *Ephemerides Academiae Naturae curiosae*.¹⁴⁴ Albrecht obtained his medical doctorate at Frankfurt on Oder (1673) before Cartesianism made any significant impact there, but he was appreciative of Blankaart's contributions to a better medicine built on the Cartesian basis of doubt.¹⁴⁵ A translator of works by Blankaart and Bontekoe, he was an even greater admirer of the latter, asserting that Bontekoe had created a clearer vision of medicine through his 'learned procedures and discoveries of many errors, previously very widely practised'.¹⁴⁶ Albrecht did not agree with Bontekoe's *Scharbock* theory as the

¹⁴² Jungken, *Chirurgica Manualis* (1718) 332-41, 349, 357-8.

¹⁴³ Jungken, after studying at Marburg and Gießen, obtained his doctorate at Heidelberg in 1672 and, until 1677, practised medicine in Murten/Switzerland. He became personal physician to several German nobles and, in 1679, was admitted among the Frankfurt physicians. In 1681, he was appointed 'medical officer' at Lohr, and, in 1682, accompanied the imperial ambassador Count Hohenlohe as physician. In 1683, he became city physician at Speyer, and, in 1686, *physicus* in Mosbach on the river Neckar, until moving permanently to Frankfurt, in 1689. There he practised at the local garrison (1690), in the city hospital (1693) and as a city physician (1695). He became a member of the *Academia Naturae Curiosorum* under the name 'Apollonius'. See *ADB* XIV (1881) 726; Stolle, *Anleitung*, 367; Wilhelm Stricker, *Die Geschichte der Heilkunde und der verwandten Wissenschaften in der Stadt Frankfurt am Main* (1847) 288-9.

¹⁴⁴ *HBL* 2nd I, 74; Heinrich Wilhelm Rotermund, *Das gelehrte Hannover oder Lexikon [...]*, 2 vols. (1823) I, 23.

¹⁴⁵ Blankaart, *Neue Kunst-Kammer* (1690) 'Lobrede' by Albrecht.

¹⁴⁶ Johann Peter Albrecht, *Klar-Entdeckte Unschuld Des jüngsthin von jemand unbillig angeklagter Thee und Coffee-Geträncke, Nebst Gründlicher Wiederlegung derer genen selbe angeführter*

origin of all internal diseases but conceded, ‘It is undoubtedly true that our way of life, food and drink, occasion a sluggish, thick, sour and badly composed blood lacking internal and external movement [...]; we eat sour, we drink sour; on the other hand, if acids are completely absent in our blood, serious illnesses can also develop.’¹⁴⁷ Nevertheless, despite these reservations, Albrecht felt that Bontekoe, ‘this spirited champion of truth has with every justification earned his place among the most skilful and enlightened medical men of this century’.¹⁴⁸

In France, Bontekoe and his allies found enthusiastic support in the talented and highly regarded physician and surgeon **Jean Baptiste Verduc** (died ca. 1696). Eldest son of Laurent Verduc, a renowned surgeon and lecturer in Paris, he had studied in Paris and Reims where he obtained his medical doctorate.¹⁴⁹ He distinguished himself in ‘surgery, as well as in anatomy, physiology and other areas of medicine’.¹⁵⁰ French surgery was much acclaimed and some of Verduc’s surgical works, repeatedly republished in French, were also translated into English¹⁵¹ and German. The *Deutsche Acta Eruditorum* brought Verduc’s *Chirurgische Schrifften* (Leipzig, 1712) to the German readers’ attention.¹⁵² Verduc’s praise of the Paris medical school as being unparalleled in science and solid scholarship was thought a little ‘exaggerated’, but the journal acknowledges that he ‘does not deny foreign *medici* their well-earned praise, among whom he counts Bohn, both Ettmüllers, the Hessian Physician in Ordinary Dolaeus, and the Netherlanders Bontekoe, Overkamp and Muys’.¹⁵³ ‘Messieurs Bontekoe, Overkamp et Muys’, asserts Verduc, ‘ont

Beschuldigungen, auch verständlicher Anweisung, warum ein Liebhaber seiner Gesundheit hohe Ursache habe, den Gebrauch sothaner nützlicher Getränke fleißig und unverdrossen fort zusetzen (Bremen, 1696) 39; Munt, ‘Impact’, 225.

¹⁴⁷ Albrecht, *Klar-Entdeckte Unschuld* (1696) 44.

¹⁴⁸ *Ibid.*, 39.

¹⁴⁹ *HLB* 1st VI, 90.

¹⁵⁰ Zedler, *Universal-Lexicon* XLVII (1746) 372, and LIX (1749) 1466.

¹⁵¹ J. B. Verduc, *A Treatise of the Parts of a Human Body with Their Respective Uses; In which Their particular Functions are clearly and fully Explain’d [...]* (1704).

¹⁵² *Deutsche Acta Eruditorum* (1712) part 4, 340-42; The *Catalogus Universalis* (1708 III) also lists translations by the Dresden city physician Martin Schurig[en]: J. B. Verduc, *Operationes Chyrurgicae, nebst einer Pathologia, darinnen alle äußerliche Kranckheiten* (Dresden), and (1711 II): J. B. Verduc, *Neue und Vollkommene Wund-Arzney mit allen benöthigten Handgriffen vorgestellt* [not seen].

¹⁵³ *Deutsche Acta Eruditorum* (1712) part 4, 340.

encore été des Médecins célèbres, auxquels on ne sçauroit donner trop de louange pour les découvertes qu'ils ont faites en Médecine et en Chirurgie'.¹⁵⁴

The *Acta* review is appreciative of the recent changes in French medicine, noting it had progressed to such an extent, 'as our author himself recognizes, because one no longer feels bound to Hippocratic rules and Galenic treatment methods which the famous Molière so often derided in his comedies, and because Aristotelian philosophy has also mostly been rejected since the teachings of this philosopher in natural science are now thought much less useful'.¹⁵⁵ Significantly, Verduc's work was published in the mid-1690s (1694), precisely the years recent scholarship has identified as the moment Cartesian and iatromechanistic concepts achieved their major break-through in French medicine.¹⁵⁶ Verduc, the journal notes, 'professes to ground everything on Cartesian philosophy and therefore tends to have no blind reverence for the ancients'.¹⁵⁷

Verduc claims to be the first to have written a pathology of surgery. He bases his whole theory of illness on a single hypothesis, namely on 'changes of the *tubulorum* or pipes and their *liquorum* or fluids'. Like the Dutch Cartesians, he identifies the causes of sickness in a corrosive acidity of body fluids, leading to stasis, coagulation, and obstruction, and in the hardening, or thinning, and subsequent rupturing, of these 'canals'.¹⁵⁸ Verduc advocates all medicines that thin and cleanse the blood, temper and absorb acids, such as 'sal volatile oleosum and Antimonium Diaphoreticum', to treat, for example, ulcers and inflammations, and recommends tea and coffee to prevent 'coagulation'.¹⁵⁹ Blood-letting and purging, also liable to thicken and sharpen the body fluids, he advises to use with 'great prudence'.¹⁶⁰

¹⁵⁴ J. B. Verduc, *Les Operations De La Chirurgie. Avec une Pathologie Dans La Quelle On Explique toutes les Maladies externes du Corps humain, & leurs remedes, selon les principes de la Physique moderne*, 2 vols. (Paris, 1694) I, Preface. The same passage recurs in J. B. Verduc, *Traite des Operations De Chirurgie, Avec Un Traité Des Maladies Vénériennes ou L'Art de se Guerir soy-même. Ouvrage très nécessaire aux Chirurgiens*, 2 vols. (Amsterdam, 1739) I, Preface.

¹⁵⁵ *Deutsche Acta Eruditorum* (1712) part 4, 341.

¹⁵⁶ Brockliss and Jones, *Medical World*, 148-9, 151, 418-22.

¹⁵⁷ *Deutsche Acta Eruditorum* (1712) part 4, 341-2.

¹⁵⁸ J. B. Verduc, *Chirurgische Schrifften [...] alles nach denen Principiis der neuesten Philosophie*, 2 vols. (Leipzig, 1712) Preface.

¹⁵⁹ *Ibid.*, 136-40.

During the early eighteenth century, with the growing influence of anti-Cartesian medical authorities, in particular Stahl, Cartesian theories of medicine increasingly went out of fashion in Germany. This is well illustrated in a long preface by **Johann Daniel Longolius** (1677-1740) who, in 1719, republished Bontekoe's *Abhandlung von des Menschen Leben, Gesundheit, Kranckheit und Tode* in Budissin and Leipzig. Here he explains his own personal circumstances and the reason for undertaking a new edition of Bontekoe's *Abhandlung*. Before taking up medicine, Longolius had pursued extensive studies in German, Latin and oriental languages. In 1702, during a stay in Halle, and much impressed by the lectures of Stahl, he exchanged his 'firmly absorbed Gassendian and Cartesian prejudices in *physica* [natural philosophy]' for Stahl's 'solid medical principles' and his theories of the interrelation of body and soul.¹⁶¹ After several years as a tutor, he returned to Halle, in 1709, to obtain his medical doctorate.

Longolius's medical training and outlook differed greatly from that of Bontekoe. That he concerned himself with a new heavily annotated edition of the *Kurtze Abhandlung* may be an indication of Bontekoe's continued influence. According to Longolius, many aspects of medicine had changed since the death of this 'famous medicus of his time', and his own Stahlian perspective led him to comment critically on Bontekoe's somewhat outdated Cartesian views and to steer the reader, to some extent, away from Bontekoe towards his own point of view. Thus Longolius disagrees with Bontekoe's 'Cartesian prejudice' that man consists of body and soul 'without the soul being in the body, or mixed and united with the same', whereas Longolius sees the soul as being united with the body '*per motum*' and 'rather *locator corporis sui* than *locatum*'.¹⁶² For Bontekoe, the heart is a muscle and the 'primary mover', whereas for Longolius the soul is the 'supreme mover', as is 'obvious from [the heart's] instantaneous reaction to happy, sad, vengeful or desperate thoughts'.¹⁶³ He also rejects Bontekoe's notion of the *Scharbock* as the cause of all diseases, and that all illness has its origin in the viscosity and acidity of

¹⁶⁰ Verduc, *Chirurgische Schrifften* (1712) 297-8.

¹⁶¹ Bontekoe, *Abhandlung* (1719) Preface Longolius, B1-2.

¹⁶² *Ibid.*, (Text) 6, 13 note: g.

¹⁶³ *Ibid.*, Preface Longolius, 36, (Text) 160.

the blood and body fluids, or in a sluggish circulation.¹⁶⁴ Contrary to Bontekoe's theory that acids are harmful to life and health, Longolius regards acids as truly essential for the human body to 'preserve the body fluids from putrefaction' and in order to 'separate surplus serum from the lymph'.¹⁶⁵ Longolius disagrees with Bontekoe that blood-letting is harmful but advises against the abuse of this 'splendid remedy'.¹⁶⁶ Tea, though, grants Longolius, should be 'highly esteemed as a delightful and healthy beverage, even if it did no more than promote (as it obviously does) the excretions of the bowels, urine and perspiration'.¹⁶⁷

Longolius' critical but not unjust attitude towards Bontekoe did not prevent him from appreciating that Bontekoe had been 'more discerning in obscurity than many contemporary conceited *lumina medica* who neither see, nor want to see, in the bright light of medical clarity'. 'How many try', like Bontekoe, he asks, 'through proper directing of the *motuum vitalium*, and not through apothecaries' concoctions and barber treatments or *sacra quarcana* (I should say *arcana*), to prevent death and prolong life and health?'¹⁶⁸ Longolius is equally appreciative of Bontekoe having 'irrefutably proven that the so-called *spiritus animales* are not a vapour but a fluid (*liquore nervoso*)'.¹⁶⁹ Longolius acknowledges Bontekoe as 'one of the most honest philosophers of his time', owing to 'his calling the vital movements of the body a *perpetuum mobile* whose beginnings and specificity were not yet sufficiently known';¹⁷⁰ however, for him, as a Stahlian,

it is certain that no *potentia matrix mechanica* exists in the human body, even if all movements are most intricately interconnected. And the one who does not realize the life-giving force of the immortal soul as the prime agent will labour in vain to find the beginnings and specificity of the *motum vitalium*, just as the most profound minds will search for a *perpetuum mobile mechanicum* to no avail until doomsday.¹⁷¹

¹⁶⁴ Bontekoe, *Abhandlung* (1719) 209 note: h.

¹⁶⁵ *Ibid.*, 431 note: x.

¹⁶⁶ *Ibid.*, 564 note: nnn.

¹⁶⁷ *Ibid.*, 528 note: aaa.

¹⁶⁸ *Ibid.*, 317 note: mmm.

¹⁶⁹ *Ibid.*, 121 note: t.

¹⁷⁰ *Ibid.*, 127 note: xx. According to Longolius, many of Bontekoe's followers went further by purporting to explain all human movement in mechanistic terms to the discredit of the noble art of medicine.

¹⁷¹ *Ibid.*, 127 note: xx.

Chapter Five

A 'Right and Reliable Guide to Constant Health and a Long Life'

When Thomasius remarked on the changes in attitude to lifestyle and people's perceptions of illness, brought about by the new medical books in the vernacular, and how to improve and safeguard health, he cited Bontekoe as the most influential author of such works in Germany. He praised his *Kurtze Abhandlung von dem menschlichen Leben, Gesundheit, Kranckheit und Tod* as an outstanding example of a learned medical book, in reference to which 'any sensible person can compare his own diet, dress, life-style, daily exercise etc., learn new truths every day and discover what gross errors he has been stuck with until then'.¹ Likewise, for acquisition of self-knowledge, Bontekoe's posthumously published *Oeconomia Animalis* (1688) was commended for demonstrating how a 'reasonable person can properly learn to know his body and its parts, the circulation and movement of the blood and fluids, and to sustain and prolong his life'.²

In the *Kurtze Abhandlung*, Bontekoe dismisses previously prescribed rules of healthy living as 'incompetent' and 'of little use in daily experience'.³ These include the hugely popular medical work *Schat der gesontheit, Schat der ongesontheit* by the well-known Dordrecht physician and erudite classical scholar Johan van Beverwijck (1594-1647), first published between 1636 and 1645 and reprinted many times, in Bontekoe's view a 'rhapsody' of almost everything that had been said by earlier physicians and especially 'poets' such as the 'Poetical Society of Salerno'.⁴ Elsewhere, Bontekoe disparages Van Beverwijck for writing 'big, useless books' and for his 'art of quoting and referring to authors, even to prove that wormwood is bitter, pepper hot and vinegar sour [...], things

¹ Christian Thomasius, *Von der Kunst Vernünfftig und Tugendhaft zu lieben [...] Oder Einleitung Zur Sitten-Lehre*, 5th edn. (1710 [1692]) 351, Munt, 'Impact', 221; Bontekoe, *Kurtze Abhandlung*, editions: Budissin, 1685; 1686; 1688; new edn. 1691; 1692; 1700; 1701; 1719; Rudolstadt 1688; 1692; Leipzig, 1692; 1719).

² Bontekoe, *Oeconomia Animalis* (1688) Translator's [H. H.] dedication.

³ Bontekoe, *Kurtze Abhandlung* (1686) Address to the reader, 4.

⁴ Bontekoe, *Tractaat* (1679) 13.

everyone knows, and appealing to the names and authority of Hippocrates, Galen, and Avicenna, whether they have said it or not'.⁵

The most prominent Dutch medical writer of the generation before Sylvius, Van Beverwijck was in some respects a transitional figure, bridging old and new. But while he shows interest in recent innovators, including Descartes, and was one of the first supporters of Harvey's circulation theory, the basic structure of his thought was certainly Galenic and traditional.⁶ The prominence of magic and demonology in his work vividly illustrates the wide gap between his thought world and that of Bontekoe and his allies.⁷ But while Bontekoe offers his own views as wholly 'new coinage' with some reservation as to its applicability in all places,⁸ in his approach to the preservation of health and prevention of illness he nevertheless continues to adhere, like most medical authors of the time,⁹ even if repeatedly ridiculing their application, to the traditional concept of the six 'non-naturals' (food and drink, sleep and waking, air, movement and rest, repletion and evacuation, including sexual activity, and the passions or emotions), introduced into Western Europe between 1070 and 1097 through translations of Hippocratic-Galenic Greek and Arabic medical texts into Latin and laid down in the *Liber ysagogarum* [Introduction] at the medical school of Salerno as 'crucial determinants of health and illness' for a 'highly individualized scheme of therapy'.¹⁰ Since the time of Hippocrates (c. 450-370 BC), diet or regimen being the 'most favoured of all types of treatment', involving 'prophylaxis even more than cure',¹¹ works such as the *Regimen in Health* by Hippocrates, and the *De Sanitate Tuenda* and *Ars Medica* by Galen (129-c. 200/216 BC), had aimed to maintain health and achieve a 'qualitative and humoral balance' by countering the cold and moist qualities of the body,

⁵ Bontekoe, *Nieuw Gebouw* (1680-81) Preface, E2, 186.

⁶ Evert Dirk Baumann, *Johan van Beverwijck in Leven en Werken geschetst* (1910) 190-1, 297-8; Nutton, 'Dr James's legacy', 211, 213-14.

⁷ A. Geyl, 'Johan van Beverwijck', in *NNWB* I, 327-32.

⁸ Bontekoe, *Kurtze Abhandlung* (1686) Dedication.

⁹ Andrew Wear, 'The History of Personal Hygiene', in W. F. Bynum and Roy Porter (eds.), *Companion Encyclopedia of the History of Medicine*, 2 vols. (1993) II, 1283-308, here 1294, states that although 'changes in ideas of regimen occurred in the seventeenth century, the non-naturals continued to be used to organize writings on hygiene' [i. e. health] until 'well into the eighteenth century'; Antoinette Emch-Dériaz, 'The non-naturals made easy', in Porter, *Popularization of medicine*, 134-59.

¹⁰ Vivian Nutton, 'Medicine in Medieval Western Europe, 1000-1500', in Conrad et al, *Western Medical Tradition*, 139-205, here 140-1; Vandeveldt in 'Bijdrage [...] Blankaart' (1924) 473, notes that between 1474-1846 the *Regimen sanitatis Scholae Salernitanae* had around 240 editions in all languages.

¹¹ Vivian Nutton, 'Medicine in the Greek world, 800-50 BC, in Conrad et al, *Western Medical Tradition*, 11-38, here 26.

air, food, drink, clothing, the seasons and environment with hot and dry qualities.¹²

For Bontekoe and other Sylvians, by contrast, ‘balance’ and healthy body functioning depend entirely on the iatrochemical-mechanistic theories of acid-alkaline influences on the body’s vascular system in which the sour corruption of the blood and body fluids, the *scheurbuik* or *Scharbock*, lies at the root of all internal disorders and diseases, including mental disturbances. To the ‘glutinous thickness, acidity, sluggishness of the blood and [body] fluids’, that ‘block, corrode, or leak from the vessels’, Bontekoe attributes tiredness, general weakness and fainting, cramps, epilepsy, shortness of breath, a stammer, hoarseness, yawning, heartburn, retching and vomiting, diarrhoea, constipation, urinary obstruction and inadequacy in the act of procreation.¹³ Madness in its varying gradients, ranging from a weak or lost memory to irrationality, melancholia or ‘insane illusion’, frenzy, and mania, has physiological causes and stems from a ‘confusion of the tubes, of which the brain consists’. If present since birth its causes are a mother’s unhealthy condition or suffering a fright, illusion, or other great emotional upset. Subsequent states of madness are the result of viscous and acidic fluids obstructing, corroding and hardening the tubes, causing inflammation, swellings and ulcers, after which pus or other moistures erupt from the tubes, gnaw through, constrict and entangle them.¹⁴ Inflammations, swellings and ulcers, gangrene, wasting disease, consumption, hunger, thirst, lack of appetite, pain, drunkenness, a dull mind, absurd reasoning, fevers (originating from accumulating acids in the pancreas) and fever-induced frenzy are all equally due to *Scharbock*,¹⁵ the ‘tree of all illness’ at whose root lies ‘sin’.¹⁶

Bontekoe’s religious views, it has been claimed, have been underestimated or disregarded as a shaping influence on his medical thought.¹⁷ Certainly, his writings do contain Calvinist rhetoric about sin and divine retribution, but it is not inconceivable

¹² Wear, ‘History of Personal Hygiene’, 1284-9.

¹³ Bontekoe, *Kurtze Abhandlung* (1686) 160-82.

¹⁴ *Ibid.*, 208-22.

¹⁵ *Ibid.*, 183-251; Blankaart asserts similar views in *Nauwkeurige verhandelinge van de scheurbuik* (1684; 1696); German transl.: *Gründliche Beschreibung vom Scharbock und dessen Zufällen. Nebstens einem Ausführlichen Bericht von der Fermentation oder Inwendigen Bewegung der Körper, meistens auf dem Grund Renatus des Cartes gerichtet* (Leipzig, 1690; 1693; 1704; Augsburg, 1704; 1710) here 1690 edn.

¹⁶ Bontekoe, *Kurtze Abhandlung* (1686) 222.

¹⁷ Schweikardt, ‘More than just a Propagandist’, 358-62.

(given his libertine reputation) that Bontekoe introduces this to mitigate what would otherwise appear an excessively naturalistic and deterministic approach to issues of sickness, duration of life and death at a time when religion strongly pervaded every aspect of life. While in places it may seem, as Christoph Schweikardt maintains, that Bontekoe ‘argued on strict theological lines’, and the explanation for disease, pain and death ‘was that all diseases and even death were the result of human sin’,¹⁸ it also seems possible, given Bontekoe’s strong predilection for Cartesian rationalism, to see this as a pseudo-theological argument. Bontekoe’s claim that Adam would have lived eternally had it not been for the Fall and that, in consequence, ‘Adam and his descendants lost their knowledge of how to maintain health through right living’,¹⁹ is perhaps merely a way of giving a Christian gloss to his insistence on ‘correct’ regulation of lifestyle.

In any case, Bontekoe, like his philosophical hero Geulincx, whose *Ethica* he published in 1679 and presents as a Cartesian moral philosophy opposed to Spinozism,²⁰ thinks nothing serves health better than love, hope, and cheerfulness, the latter being a ‘constant joy, like a continual meal’ that is experienced ‘only by a real philosopher or a relieved Christian’. Worry, fear, shyness, sadness, anger, hatred, envy, pity, regret, or moroseness are emotions disagreeable to the soul and deleterious to the body.²¹ For Bontekoe, regulating the emotions so as to lead a healthy life is neither a matter of eradicating the passions as in Stoic thought, nor, seemingly, of combating sinful feelings in a Christian sense, but rather promoting joy-inducing feelings above somber emotions through self-inspection and rational management of the passions.

Bontekoe’s stress on ‘self-knowledge’, an obligation laid upon man by God but ultimately his own responsibility,²² leads him to advocate prevention more than cure. He deplores the way many people fail to take proper care of their bodies through

¹⁸ Schweikardt, ‘More than just a Propagandist’, 361; See Bontekoe, *Tractaat* (1679) 3-4.

¹⁹ Schweikardt, ‘More than just a Propagandist’, 361-2; See Bontekoe, *Tractaat* (1679) 6, 7, 42-3; Bontekoe, *Kurtze Abhandlung* (1686) 151, 298-9.

²⁰ Jan de Vet, ‘Arnold Geulincx’, in Bots, *Pieter Rabus*, 261-72, here 266; From the beginning of the eighteenth century, however, Bontekoe’s interpretation of Geulincx was over-turned and Geulincx’s reputation came to be permanently damaged by being linked to Spinoza. See Israel, *Radical Enlightenment*, 483-4, 543, 635.

²¹ Bontekoe, *Kurtze Abhandlung* (1686) 364-70; Cornelis Verhoeven (ed.), *Arnold Geulincx, Van de hoofddeugden* (1986) 67; De Vet, ‘Arnold Geulincx’, 262, 269.

²² Bontekoe, *Kurtze Abhandlung* (1686) Dedication to the Reader.

‘ignorance, foolishness and the disgust they generally have for medicine, thinking daily medication unnecessary until one becomes ill’ and the *Scharbock* has increased and ineradicably taken root.²³ For Bontekoe, neglecting one’s health is living after one’s own fancy and a sure way to lose life and soul. Carnal desires, dancing, gamboling, or riding, consume the body fluids and make them acidic.²⁴ A physician’s chief task should be to see this danger, warn others, and instruct them how to preserve health with ‘temperance’ as the foremost element, thereby preventing illness, and deferring for some considerable time old age and death. Consequently, holds Bontekoe, medicine and morality must go together.²⁵ But deeply rooted opinions about health and disease among the populace, Bontekoe recognized, were not easily changed:

The tastes and pleasure they get from their drinks, their idle desire for a fat belly, a coarse body, and eyes bulging with fat, so as to appear well fed, will not easily make them resolve to transform their idea of beauty into something that is repulsive in their eyes. One hates and despises the small and delicate, the skinny and emaciated [as they see it], resembling a ghost or a scarecrow more than a human being. One wants to be big, fat, and coarse, stout and well made, full of strength and vigour; one must be able to drink a good deal; that [in their eyes] constitutes health.²⁶

Bontekoe’s dietary advice is based on preventing and driving out the *Scharbock*. Like intemperance, an unhealthy diet, such as ‘coarse, hard, acidic, salty and sour food and drinks’, in his view, is a ‘short way to *Scharbock* and death’, old age being a ‘properly complete *Scharbock*’.²⁷ He approves of bread, meat (if fried briefly), eggs, milk, but

²³ Bontekoe, *Kurtze Abhandlung* (1686) 266-7, 411-14. An advocate of simple remedies, instead of the ‘many thousands of useless, yes, harmful compositions’, Bontekoe presents his prophylactic ‘*Scharbock*-water’, of which ‘a spoonful or more, taken with brandy, wine or tea, may be used daily to great advantage for keeping in good condition and to fend off illness as well as the crazy mixtures, stinking and rotten juices, ghastly preserves, disgusting pills and suchlike muck of wicked doctors and apothecaries’.

²⁴ Ibid., 315-17.

²⁵ Bontekoe, ‘*Waarschouwinge*’, in *Tractaat* (1679) B2-3. According to Wear, ‘History of Personal Hygiene’, 1290-3, the Galenic view that a person’s life-span was ‘fixed by nature’ had already since the Middle Ages gradually yielded to a ‘more active and manipulative view’ of nature and the body, aiming at prolonging life through regimen (e. g. diet, baths, exercises) besides secret or alchemical remedies. By the sixteenth century, health-advice books began to reflect strong links between morality and hygiene with an emphasis on self-help and personal responsibility towards the body through hygiene, Christianity and temperance.

²⁶ Bontekoe, *Tractaat* (1679) 58.

²⁷ Bontekoe, *Kurtze Abhandlung* (1686) 251-3, 275-6, 277-90.

does not see any merit in cheese, butter, whey, or buttermilk.²⁸ Eating fish is ‘not without danger’ as it causes *Scharbock*, and fruit, deemed not nourishing and ‘full of acid’, must be largely avoided.²⁹ Animals and man, states Bontekoe, can live healthily without ‘acid’, and food is best if containing little sweetness or salt and preserves health better eaten raw than cooked, roasted, baked or brewed. Bontekoe considers rye bread ‘too sour’ and white bread ‘too glutinous’. All broth and sauces, except those made from onions, garlic, or shallots, are ‘harmful’, being ‘too salt and sour oriented’. He recommends porridge of oats or barley, as well as vegetables, ‘some fruits’ (left unspecified), and salads.³⁰

Bontekoe especially advocates spices conducive to fighting the *Scharbock*, such as cinnamon, cloves, nutmeg, pepper, cardamom, ginger, and home-produced parsley, fennel, aniseed, onions, garlic, shallots, celery, chervil, mustard seed, watercress etc.. He considers it a ‘great mistake that the European nations are so afraid of these spicy things which Eastern countries use abundantly without producing too much gall or gall-diseases as our title-doctors assume’. According to Bontekoe spices are vital *because* they increase the gall, which, if lacking, causes body fluids to become thick, acidic and sluggish, thus leading to *Scharbock*.³¹ Traditional notions of regular meal times are dismissed as unnecessary, for to prevent the body fluids becoming corrupted by acids one should eat and drink when hungry or thirsty. Of all beverages, water is the most desirable while beer, wine and brandy should be regarded as medicine or thinned with water.³² As clean cold water was rarely available, Bontekoe recommends using boiled water, tea, coffee and chocolate.

In Bontekoe’s view, a daily substantial intake of warm, alkaline fluids was essential to preserving health and curing illness. Beer and wine encouraged the acidity and viscosity

²⁸ Bontekoe, *Kurtze Abhandlung* (1686) 331-6, 343-60; Bontekoe, in *Tractaat* (1679) 67, comments that whey and buttermilk are ‘too raw, too nasty [goor] and useless to be drunk by humans’; Blankaart, in *Accurate Abhandlung von dem Podagra* (1690) 286, states that those imbibing buttermilk regularly will ‘infallibly fall victim to *Scharbock*’. In the ‘Verhandeling van de Coffeé’, in *Gebruik en Mis-bruik van de Thee*, he decries ‘sour whey’ and buttermilk as ‘that great poison in our land’. See Vandeveld, ‘Bijdrage [...] Blankaart (1924) 480.

²⁹ Bontekoe, *Kurtze Abhandlung* (1686) 336-9, 339-41.

³⁰ Ibid., 339-51.

³¹ Ibid., 351.

³² Ibid., 352-62.

of the blood and body fluids, caused kidney and bladder stones and painful gravel, whereas tea especially not only cleansed the stomach and intestines and neutralized acidic fluids but was an excellent remedy against colic.³³ Bontekoe himself found out by chance that drinking tea on a regular basis had rid him of the gravel that had caused him severe colicky pain and bloodstained urine.³⁴ He thus became a fervent advocate of tea, refuting frequently voiced protests that it dried out and emaciated the body, increased gall production and caused a weak stomach, dropsy, trembling or sterility.³⁵ Since the first publication of his tea treatise, he states, more than forty persons in The Hague, Delft, Rotterdam, Amsterdam and elsewhere affirmed the beneficial effects of following his advice (which involved drinking between ten to twelve cups of tea, and, if required, up to 100-200 cups to flush out the gravel),³⁶ several having thereby found fast relief from gravel pains.³⁷

Bontekoe's list of the cleansing, neutralizing, stimulating, age-defying, health-promoting powers of tea - in the mouth, stomach, bowels, in the blood and brain, for the eyes and ears, against drunkenness and the *Scharbock*, surpassing baths and warm waters as an external remedy, and excellent against fever,³⁸ forms a catalogue fit for a quack. But he also points out that 'tea is not the panacea, the *lapis philosophorum* or universal medicine for all ills (which does not exist in nature, however much sick-minded chemical loudmouths say otherwise). One must distinguish a little and use this remedy in its proper time and place'.³⁹ On the other hand, he contends, 'Tea cleanses the blood and the body much better than murderous blood-letting, emaciating purging, foul enemas, kettle brews full of *apozemata* and other useless things which are readily available in apothecary shops as in deadly arsenals

³³ Bontekoe, *Kurtze Abhandlung* (1686) 416-37.

³⁴ Bontekoe, *Tractaat* (1679) 186-7.

³⁵ Ibid., 68-116; Bontekoe, *Kurtze Abhandlung* (1686) 413-65;

³⁶ Bontekoe, *Tractaat* (1679) 228-30; 245-7, 275. According to Bontekoe, thirty cups of tea amounted to ca. 'two and a half pints'. He was frequently ridiculed for his advocacy of large amounts of tea which, for specific ailments, seems fully justified. Before him, the well-known Jesuit and polyhistor Athanasius Kircher (1602-80), for this reason quoted by Bontekoe (*Tractaat*, 246), had written that 'even if drunk 200 times' tea was not injurious to health. See Philipp Baldaeus, *Wahrhaftige Ausführliche Beschreibung Der Berühmten Ost-Indischen Küsten Malabar und Coromandel, Als auch der Insel Zeylon* (1672) 179.

³⁷ Bontekoe, *Tractaat* (1679) 230; Many people in early modern Europe, Harold Cook observes, 'suffered the excruciating torments of stones in the body' a complaint often 'accompanied by the "gravel", in which the urine contained abundant sand-like particles and a thick white slime that could be voided only with difficulty.' See Cook, *Trials of an ordinary Doctor*, 82-3.

³⁸ Bontekoe, *Kurtze Abhandlung* (1686) 413-65; Bontekoe, *Tractaat* (1679) 117-232.

³⁹ Bontekoe, *Tractaat* (1679) 187.

and in vogue with title-doctors.⁴⁰ ‘Title-doctors’, complains Bontekoe, ‘even on finding that tea drinking makes many people feel well, do not cease trying to prevent its use. If they encourage it at all they advise drinking no more than one or two small cups, as if tea was their Scamnomium.’⁴¹

A pamphlet entitled ‘Krachten van de Thee’, published around 1680 and allegedly rendered from the Chinese, must have appealed to Bontekoe and Blankaart, for its list of virtues reappears in Bontekoe’s *Gebruik en Mis-Bruik van de Thee*, posthumously published by Blankaart (1686). Blankaart, in fact, largely copied the wording of the pamphlet for his section on tea in his medical dictionary claiming that tea

purifies the Blood, prevents troublesome Dreams, expels malignant Vapours from the Brain, takes off Giddiness and the Head ach, especially when it proceeds from over eating, it is good in a Dropsy, for it provokes Urine very much, it dries up Rhumes of the Head, corrects the Acrimony of the Humours, opens Obstructions of the Bowels, and strengthens the Sight[...] cools a hot Liver and softens a hard Spleen; it keeps People wakeful, especially those that are not used to drink, it renders the Body brisk, cheers the Heart, drives away Fear,[...] takes off the Gripes and suppresses Wind, it strengthens the Bowels, quickens the Memory, and sharpens the Wit [...] it may [...] be reckoned an excellent Remedy for the Stone, [...] is moreover a Provocative to Venery, it strengthens the Stomach and is very good for Gouty People.⁴²

Joannes Muys, speaking from personal experience, recounts how tea and coffee improved his health. While studying at Leiden, he had suffered from ‘dreadful headaches throughout the year’, but after drinking large quantities of tea daily, and especially coffee, these symptoms disappeared. Beforehand, life had been ‘like a living death’ and he had wrestled for five years with a long series of illnesses. Now, ‘freed of all indisposition’, his goal was to help others instead.⁴³ In Bontekoe’s opinion, coffee, though not endowed with as many virtues as tea, was ‘not unhealthy’ and did not produce bad effects like beer and wine,⁴⁴ while chocolate, he claims, ‘contains more nourishment than a pound of meat’. But spoiling

⁴⁰ Bontekoe, *Kurtze Abhandlung* (1686) 455.

⁴¹ Scammony, a ‘foul-tasting’ gum resin with a ‘repulsive smell’ used as a drastic purgative; See Woyt, *Gazophylacium* (1722) 840.

⁴² Blankaart, *The Physical Dictionary*, 4th 1702 edn., 304.

⁴³ Muys, *Treu-gesinnte Samaritter* (1694) 327; Muys, *XII Tien-tallen* (1699) 410-11.

⁴⁴ Bontekoe, *Kurtze Abhandlung* (1686) 469-70; Bontekoe, *Tractaat* (1679) 253-78.

it with ‘stuff like saffron, eggs, milk etc.’, was not to Bontekoe’s taste, for even if it ‘could not be regarded as poison’, such ‘mishmash’ did not have the potency deriving from genuine fresh Spanish chocolate.⁴⁵

Prevention being better than cure, and against the ‘prejudiced notion that a medicine cannot be beneficial if used in times of both health and illness, because extensive use renders it powerless’, Bontekoe recommends a daily ample amount of tea and tobacco as ‘the most excellent means to prevent and cure the *Scharbock*’ which can be used throughout one’s life without their good effects abating.⁴⁶ Nothing should be held in higher regard, nothing was as essential and useful to life and health as tobacco smoke.⁴⁷ A frequently quoted passage from Bontekoe’s *Kurtze Abhandlung* suggests:

When feeling anxious of heart, deaf of ear, listless, malaised, weak, drowsy, and stiff with *Scharbock*, for pain in the head, eyes, teeth, or elsewhere, a weak or darkened sight, strained hearing, or a fitful sleep; if plagued by podagra, the stone, colic, scabies, spots, thinness, gross stoutness, winds or worms, then tobacco, especially the Virginian kind, its smoke and vapour, is a truly genuine remedy against all the branches [...] and fruits of this tree [of all illness], the *Scharbock*, because it uproots and drives it away.⁴⁸

Bontekoe deplored that many people still hated tobacco, maligned and proscribed it, and that most women in particular did not want to smoke and, as much as possible, hindered men from doing so. But he was confident that time, the all-transforming factor, which had, within a few years, changed smoking from a ‘disgraceful activity’ into an ‘honest, common commodity’, would also finally convert women to tobacco, for whom it was ‘highly necessary and useful’. He encouraged men by their powerful example to convince women that smoking was not a debauchery, pastime, or recreation but essential for a long and healthy life. It was indeed plausible, Bontekoe suggests, that few women would object to smoking if it were combined with drinking tea instead of wine to which many were already accustomed, for nothing was more enjoyable and healthy than to smoke tobacco after a few

⁴⁵ Bontekoe, *Tractaat* (1679) ‘Een kort tractaat, van de kragten en’t goede gebruyk van de chocolate’, 291-320, here 295; Bontekoe, *Kurtze Abhandlung* (1686) 470-1.

⁴⁶ Bontekoe, *Kurtze Abhandlung* (1686) 376-90, 445-53.

⁴⁷ Ibid., 376; Also reported in Zedler, *Universal-Lexicon* XXIV (1740) 656.

⁴⁸ Bontekoe, *Kurtze Abhandlung* (1686) 387-8.

cups of tea, and, before the mouth becomes dry, to again drink tea. Women, held Bontekoe, having until now been much discontented by their men segregating themselves to binge on wine, brandy and tobacco, should rather take pleasure in tobacco's virtues, join in as companions of their men (for which, after all, they were made), and encourage them and others to smoke. That smoking was generally considered disreputable should not worry them, for if made fashionable by some 'noble and heroic' women, after the manner of many English ladies, few would remain so biased but soon follow the fashion – fashion, in any case, being the idol of women.⁴⁹ While Bontekoe was in general strongly prejudiced against women acquiring medical knowledge and expertise, deeming this sphere beyond their intelligence,⁵⁰ here he urges them to play a leading role in propagating the use of tobacco as an aid to healthy living and, against convention, adopt a more liberal life-style.

In his *Borgerlyke Tafel* (1683), Blankaart also praises tobacco's health-giving properties of improving the body fluids and tempering acidity, claiming it had 'kept many a soldier and sailor alive', but advises a light variety as 'strong tobacco makes a very sharp blood and offends the lungs', a more moderate use of four to six pipes daily being preferable to smoking all day long. He too endorses tobacco smoking for women as a preventive and curative measure (practised by women in North-Holland and, in his view, worth emulating in Amsterdam and elsewhere).⁵¹ In the German version, the *Speise- und Tisch-Buechlein* (1685), the translator, Georg von Keyl (Cunaeus), does not mention women and, next to listing tobacco's merits, emphasizes its ill effects more strongly than Blankaart, particularly at first use, causing 'cold sweats, dizziness, vomiting, trembling of the limbs and suchlike, yes, frequently even faints due to the violent confusion of the life-spirits'.⁵² Like Bontekoe, Blankaart urges the importance of a health-promoting alkaline-rich diet and avoidance of mucus- and acid-producing food and beverages.⁵³ He especially commends tea as the 'healthiest beverage' known to him, good for maintaining health and beneficial during

⁴⁹ Bontekoe, *Kurtze Abhandlung* (1686) 388-90.

⁵⁰ Bontekoe, 'Apologie', in *Tractaat* (1679) 334.

⁵¹ Blankaart, *Borgerlyke Tafel* (1667 [1683]) 88-9; Blankaart, *Cartesianische Academie* (1690) 381-2.

⁵² Blankaart, *Speise- und Tisch-Buechlein* (1695) 62.

⁵³ Blankaart, *Borgerlyke Tafel* (1667 [1683]) 56-59, 89-90; *Cartesianische Academie* (1690) 378-406.

illness.⁵⁴ Coffee, ‘used more frequently in England than in Holland’, and although not as pleasant to drink or look at as tea, is considered almost as good and not to be spurned.⁵⁵

The 1702 English version of Blankaart’s medical dictionary enthuses:

The Decoction of it strengthens a cold Stomach, helps Concoction and opens Obstructions of the Bowels and Womb; but it is most taken notice of for removing Drowsiness and Giddiness; and it is commended indeed for most other Diseases of the Head, as Head-ach, Lethargy, also for Catarrhs, and is used with good Success by those that are of a gross Habit of Body, and of a cold Constitution, and whose Blood is Watery, and their Brains moist, and their Animal Spirits dull; but on the contrary, they who are of a thin Habit, and a hot and Melancholy Constitution, ought by all means to forbear Coffee; as also those that have but weak Spirits, or are subject to a Trembling, or Numbness in the Limbs, or a Palpitation of the Heart, but ‘tis reckon’d good in a Scorbutick Gout, and for the Gravel.⁵⁶

As for food, bread is regarded as first-rate nourishment, provided it is well-risen as yeast or sour leaven releases its main components for easier digestion of the ‘corn’s glutinous and slimy particles’. Under-baked it is ‘very harmful’, producing a ‘glutinous ferment and much mucus’ causing obstructions since ‘thick and tough particles cannot pass through the smallest tubes of our body’. Bread, moreover, is more nourishing and less constipating if retaining the bran.⁵⁷ Equally undesirable are buttermilk, salt meat and ‘sour’ fruits such as lemons since ‘Sout en zuir, Krenkt de natuur’ [salt and sour offend nature], again thickening body fluids and risking obstruction.⁵⁸ Blankaart approves salads and other leafy and root vegetables, but opposes ‘corruption’ of salads with sour vinegar as a prime source of ‘Scharbock with its train of hundreds of ailments’.⁵⁹

Gehema, in his *Diaetetica Rationalis* (1688), written ‘for the benefit of all people, learned and unlearned’, and, to promote his aims, dedicated to ‘all the aldermen of Bremen’, explains why a suitable diet is essential for enjoying a long and healthy life. Like Bontekoe, he rejects the dietary teachings of the *Schola Salernita*, of Beverwijck, and the ‘whole rhapsody of practicum who copied from each other’ until the advent

⁵⁴ Blankaart, *Borgerlyke Tafel* (1967[1683]) 84-6; *Cartesianische Academie* (1690) 378-9.

⁵⁵ Blankaart, *Borgerlyke Tafel* (1967[1683]) 86-7; *Cartesianische Academie* (1690) 380.

⁵⁶ Blankaart, *Physical Dictionary*, 4th 1702 edn., 76.

⁵⁷ Blankaart, *Borgerlyke Tafel* (1967[1683]) 4-9.

⁵⁸ *Ibid.*, 56-9.

⁵⁹ *Ibid.*, 16-24.

of the ‘excellent theory of acid and alkali which converted many’.⁶⁰ Until Harvey’s discovery of the blood circulation, claims Gehema, ideas about diet were confused and built on unsteady ground. Yet despite this discovery, no one had the courage to throw off the old yoke of medicine and openly prescribe a diet conducive to the blood circulation, for fear of being regarded as a ‘*novator* and heretic’. If through better knowledge and their conscience some *medici* did so, they acted secretly and in a way so mixed with the old doctrines that this was no better than an old dress mended with new patches. It was the ‘undaunted reformer Bontekoe’, asserts Gehema, who finally provided sound evidence that the proper functioning of the blood circulation, on which health and life depend, is impossible unless safeguarded with a suitable diet, a *diaetetica rationalis*, avoiding those foods that could impede its flow, which anyone desiring a long and healthy life had to observe.⁶¹

In Cartesian fashion, Gehema compares the body to an organ with thousands of small pipes through which the blood and body fluids must circulate unhindered to maintain health. Like Bontekoe, he believes all internal illness originates in the *Scharbock*. Worst offenders are acids and salt in the diet. Fruit, which can cause ‘all sorts of dangerous fevers, cholera, diarrhoea, dysentery, colic, dropsy, and sterility in women’, are to be avoided, as well as acid- and mucus- producing jams, syrups and confectionery, fish (especially dry or salted), ‘sour-dough’ bread, spinach and sorrel. Vegetables like beans, peas, cucumbers, artichokes, asparagus, turnips, carrots, beetroot, and parsnips are considered not unhealthy but need ‘correcting’ with aromatic herbs. Meat, milk and eggs, in Gehema’s view, provide the best nourishment. Beverages must be well boiled or fermented, beers thin and wines sweet, tea being the ‘most splendid water drink’,⁶² because he affirms, it makes ‘spiritual, astute, and good rationalists’ and is an especially powerful means of driving out ‘all Aristotelian and Peripatetic nightmares and poltergeists’. On the other hand, it assists with ‘acquiring good principles for defending the excellent Cartesian philosophy in the most assiduous manner’. Gehema confidently maintains that physicians liberated from their firmly rooted *prea-*

⁶⁰ J. A. Gehema, *Diaetetica Rationalis das ist: Auff unlaeugbahren festen principiis, gesunder Vernunfft und wahren experience wolgegründete Lebens-Ordnung, Wodurch ein jeder Mensch in seinem Stande seine Gesundheit bewahren, und ein von mancherley beschweren befreytes Leben hie auff Erden fuehren koenne* (Bremen: 1688; 1689; 1690; Stettin, 1690; Dutch transl.: The Hague, 1690) here 1688 edn., 25.

⁶¹ Gehema, *Diaetetica Rationalis* (1688) Dedication, 10-11.

⁶² *Ibid.*, 25-56.

occupationibus through the use of tea will be disposed to institute ‘a rational method of treating their patients and explain the cause of illnesses comprehensively’.⁶³

Pivotal in all discussions about diet is the preoccupation of these medical authors with tempering the acidity in the body and recommending alkaline-rich foods and beverages. The overriding significance of the acid-alkaline balance in their conception of the body’s physiology, for health and the prevention and treatment of illness, and their endeavour to influence and correct it from the start of a person’s life, is well illustrated in Gehema’s and Blankaart’s works on child care.⁶⁴ Blankaart, in his *Verhandelinge van de opvoedinge en ziekten der kinderen* (1684), explains the workings of acids and alkalis and even includes drawings of their imagined shape.⁶⁵ Perhaps never had a theory met with ‘so much approval as the one dreamed up by Helmont, Le Bœ Sylvius, Craanen and Bontekoe’, observed Knebel at the end of the eighteenth century.⁶⁶ Their undeniable influence on German medical opinion and debate is obvious from Friedrich Hoffmann’s ‘investigation of acid and mucus’ as the alleged source of all diseases and ailments of the human body.

In his *Eigentliche Untersuchung Der Säure und des Schleimes* (1696), Hoffmann sets out to refute Bontekoe’s and Blankaart’s proposition while, at the same time, remaining fair and objective in his judgement. Hoffmann himself, following the principles of his teacher Wedel at Jena, had defended the chemiatic system until 1681, when his travels to England, and contacts with Boyle and Sydenham, are thought to have changed his views. Since 1688, Hoffmann is said to have turned against chemiatry,⁶⁷ but from the preface to his *Observationum physico-chymicarum selectiorum (Opera omnia IV, Geneva, 1740, 443-7)*, Ingo Wilhelm Müller observes, it is obvious Hoffmann regards chemistry, like mechanism, as an ‘indispensable part of experimental research, contributing to the perfecting of medical science and, in his view, not practised in full measure’.⁶⁸ According to Müller, he does not reject the chemical principles of Dele Bœ Sylvius, as he sees in them the beginnings of a

⁶³ Gehema, *Edler Thee-Tranck* (1686) 23.

⁶⁴ J. A. Gehema, *Die Sorgfältige und Gewissenhaffte Säug-Amme, Fürstellende die Mißbräuche, welcher man sich bißhero bey säugenden Kinder bedienet, Und anweisende, wie solche nach den besten Medicinischen principiis, biß zur Abwehnung von der Mutter-Brüsten zu fester Speise und Geträncke zu verpflegen sey* (Berlin, 1689).

⁶⁵ Blankaart, *Verhandelinge van de opvoedinge*, 1966 Reprint, 39-46.

⁶⁶ Knebel, *Versuch einer Chronologischen Übersicht*, 243.

⁶⁷ Sprengel, *Versuch IV*, 404.

progressive medical science. Even if Sylvius draws incorrect conclusions, Hoffmann does not deny him certain elements of truth. He sees in the Cartesians Craanen, Bontekoe, Regius, Blankaart, and Waldschmidt whom he names as Descartes' main proponents, the direct continuation of Sylvian iatrochemistry and, again, does not condemn their basic chemiatic principles but rather points to the shortcomings of their iatrochemical system which, to his mind, is too one-sided, their acid-alkaline based hypotheses not being sufficiently geared to medical reality.⁶⁹

In his *Eigentliche Untersuchung*, a translation of his *Exercitatio acromatica de acidi et viscerum insufficientia pro stabiliendis omnium morborum causis* (Frankfurt, 1689), a work said to be frequently cited in his own time,⁷⁰ Hoffmann acknowledges that Bontekoe's and Blankaart's 'new proposition is not without merit, indeed has bequeathed medicine a great light'⁷¹ in that acid and mucus indeed impede the flow of the body fluids and are the cause of many and severe illnesses.⁷² Alkaline, volatile, sulphurous medicines (as proven by Otto Tachen) and those increasing fluidity, like warm drinks, especially tea with its beneficial volatile salts, he admits, are powerful remedies conducive to maintaining the blood's proper balance and circulation.⁷³ Hoffmann lists several Dutch medical remedies, such as the *spiritus volatilis oleosus Sylvii*, *spiritus sali ammonii* and others, and concedes, 'truly, should we confess the truth in German, we must admit an agreeable physician could hardly successfully cure well-nigh most diseases without such alkaline and volatile salts'.⁷⁴

Hoffmann's cogent counter-arguments show, however, that excessive thinning of the blood with warm beverages and the untimely, immoderate use of volatile salts, especially ammonium carbonate, are 'harmful and reprehensible', causing, among other ailments, 'headache, faints, haemorrhages, even death'.⁷⁵ Drinking too much tea, says Hoffmann, i.e. more than forty cups, weakens the stomach and overly dilutes the gastric and intestinal juices, thus impeding digestion and absorption of food and leading to 'fevers, cachexia,

⁶⁸ Müller, *Iatromechanische Theorie*, 23.

⁶⁹ Müller, *Iatromechanische Theorie*, 22-3, notes 28 and 29.

⁷⁰ Johann Christoph Schroeer, *Kurtze Gedancken welche über das gewöhnliche Thee-Trincken so viel die Erfahrung an die Hand gegeben* (Frankfurt an der Oder, 1696) 28.

⁷¹ Hoffmann, *Eigentliche Untersuchung* (1696) 23.

⁷² *Ibid.*, 7-14.

⁷³ *Ibid.*, 7-14, 16-22; Schroeer, in *Kurtze Gedancken* (1696) 31, refers to Hoffmann's advocacy of warm water and tea.

⁷⁴ Hoffmann, *Eigentliche Untersuchung* (1696) 14.

⁷⁵ *Ibid.*, 23-28.

dropsy and other conditions'.⁷⁶ Chemical experiments led to the conclusion that only a well-balanced composition of the blood and body fluids containing a certain amount of acidic salts was conducive to health and well-being.⁷⁷ Sour food such as quinces and lemons, drinks like wine, and acidic remedies like wine-vinegar and cream of tartar, should therefore not be banned from medical practice because, contrary to the views of many, 'excessive acids are not as harmful to the human body as alkaline solutions'.⁷⁸ As Hoffmann belongs to the 'most-read and most frequently quoted medical authors of the eighteenth century',⁷⁹ it seems plausible, as Sprengel asserts:

This treatise effected a very positive change of public opinion [...] and even if Hoffmann had until then only disapproved of gross abuses in Dutch chemistry without opposing its chemiatic theories, one proceeded in Germany from then on much more cautiously and no longer worshipped so blindly the fancies [Grillen] of Craanen, Bontekoe and Gehema.⁸⁰

Nevertheless, it appears that preoccupation with sour and acidic food and drink had become widespread, for as the Breslau physician Johann Gottfried Kühne remarked, in 1717, many were 'all too scrupulous in avoiding salt, spices, and even moderately sour items like lemon and bitter orange [Pomeranzen] juices, and acidic wine more than necessary, and therefore want to eat nothing but soups, meat, plums and pies', the body being 'in need of sour as well as alkaline elements, though sourness must not dominate'.⁸¹

Even if much disputed as a heresy in their own time,⁸² the theory of *Scharbock* as the chief cause of illness in terms of the acid-alkali theory, requiring essentially chemical-pharmacological therapeutics, as expounded by Bontekoe, Blankaart, and Gehema in particular, nonetheless evidently became widely entrenched. This was recalled in Zedler's *Universal-Lexicon*, in 1741, citing the views of the Italian iatromechanist medical professor

⁷⁶ Hoffmann, *Eigentliche Untersuchung* (1696) 30; Repeated in Schroeer, *Kurtze Gedancken* (1696) 43.

⁷⁷ Hoffmann, *Eigentliche Untersuchung* (1696) 30- 9.

⁷⁸ *Ibid.*, 57- 63.

⁷⁹ Müller, *Iatromechanische Theorie*, 31-2.

⁸⁰ Sprengel, *Versuch* IV, 404.

⁸¹ Johann Gottfried Kühne, *Vollständige Nachricht von der CHOCOLATE, Worinnen Von derselben Ursprung, Nahmens-Benennung, herzlichen Ingredientien, Preißbarem Nutzen und Gebrauch, gründlich und umständlich gehandelt wird* (Nürnberg, 1717) 66, 74.

⁸² Baumann, *Uit Drie Eeuwen*, 129.

Giorgio Baglivi (1668-1707) who, though dismissing the Sylvian theory of all disease originating from acids and needing to be countered with alkalis as the ‘most simplistic and one easily grasped by a silly woman within a few days’, had conceded, in his *De Praxi medica* (1699), that ‘these days’ it was ‘in repute above others’.⁸³ The words *Scharbock* or, in French, *Scorbut*, Zedler explains elsewhere, ‘these days have become the general explanation to which everyone turns when he encounters a disease with unusual or unknown symptoms’.⁸⁴ Trevisani refers to north-European medicine at that time as afflicted by a veritable ‘scorbutomania’, its extreme expression being Bontekoe’s defining the *Scharbock* as ‘radicem et causam omnium morbum’, noting that vestiges of its impact persisted to at least the 1860s when the German physician Knebbel identified fifteen kinds of scorbutic complications, including malaria, dysentery and arthritis.⁸⁵

That there was a widespread acceptance in particular of Bontekoean ideas on maintaining the unhindered flow of the body fluids as an integral part of his therapeutics to counter *Scharbock* may be seen from Albrecht von Haller’s comment on a 1750 dissertation in his *Tagebuch der medizinischen Litteratur*: ‘The intention is to set Boerhaave’s doctrine of the harmful thinness of the blood against the followers of Bontekoe and the common prejudice.’⁸⁶ Such remarks seem to reflect a general reaction in the mid- and late eighteenth and early nineteenth century against their theories, derided also by Sprengel who asks, ‘Was there ever [...], since medicine has been scientifically pursued, such a barbarity as that introduced by the chemiatic School of the seventeenth century?’⁸⁷

⁸³ Zedler, *Universal-Lexicon* XXIX (1741) 1649.

⁸⁴ Ibid., XXXIV (1742) 879-928, here 880.

⁸⁵ Trevisani, *Descartes in Germania*, 285.

⁸⁶ Römer and Usteri, *Herrn von Hallers Hallers Tagebuch* II, entry: 1750, 45.

⁸⁷ Sprengel, *Versuch* IV, 393.

Chapter Six

Tea, Coffee, Chocolate and Tobacco - the Controversies surrounding their Use as Health-Promoting Remedies

i) 'Reliable Thoughts' on Tea, Coffee and Chocolate

Bontekoe and Blankaart, supported by their followers and before them Nicolaas Tulp,¹ contributed significantly to the tea- coffee- and chocolate debate in Germany which lasted until well into the eighteenth century. Chinese tea, Arabian coffee and Spanish-American chocolate, had been known to Europeans from the Caribbean, Near- and Far-Eastern travels of missionaries, merchants, botanists, and explorers since the early sixteenth century.² But only from the 1650s onward, as a result of the rapidly expanding long-distance trade of the Dutch, English and French³ and a growing interest in the medicinal, health-giving properties of tea, coffee and chocolate found in seventeenth century travel accounts⁴ and medical treatises discussing their use and abuse,⁵ were these gradually introduced, first as medicinal, luxury products for the wealthy and then more widely.⁶

Bontekoe's *Tractaat van het Excellenste Kruid THEE* was popular as well as highly

¹ According to the Museum Boymans van Beuningen catalogue *Thema Thee, De geschiedenis van de thee en het theegebruik in Nederland* (1978) 23-4, the Amsterdam physician and burgermaster Nicolaas Tulp (1593-1674) was one of the first Dutch doctors to stimulate an interest in tea-drinking as a medical remedy in his *Observationes medicae* (Amsterdam, 1652) IV, 400-3, advocating tea as a well-tryed method to 'prolong life to a very old age, as well as prevent all sorts of health complaints'. Tulp was quoted as a medical Dutch authority on tea in the Netherlands as well as in most subsequent German publications on tea.

² For a comprehensive survey see Wolf Müller, *Bibliographie des Kaffee, des Kakao, der Schokolade, des Tee und deren Surrogate bis zum Jahre 1900* (1960).

³ K. N. Chaudhuri, *The Trading World of Asia and the English East India Company 1660-1670* (1978) Appendix 5, 507-48; Jonathan I. Israel, *Dutch Primacy In World Trade 1585-1740* (1989) 177, 311, 336, 338-9, 381, 390; Niels Steensgaard, 'The growth and composition of the long-distance trade of England and the Dutch Republic before 1750', in James D. Tracy (ed.), *The Rise Of Merchant Empires, Long-Distance Trade In The Early Modern World 1350-1750* (1990) 102-52; Karel Degryse, 'The Origins of the Growth of West-European Tea-Trade in the 18th Century', in Klaus Friedland (ed.), *Maritime Food Transport* (1994) 483-8.

⁴ Antoinette Schnyder-v. Waldkirch, *Wie Europa den Kaffee entdeckte. Reiseberichte der Barockzeit als Quellen zur Geschichte des Kaffee* (1988).

⁵ Müller, *Bibliographie*; C. A. Bergsma, *Catalogus auctorum qui de thea scripserunt* (1825).

⁶ Peter B. Brown, *In Praise of Hot Liquors, The Study of Chocolate, Coffee and Tea-Drinking 1600-1850* (1995); Rudi Matthee, 'Exotic Substances: The Introduction and Global Spread of Tobacco, Coffee, Cocoa, Tea, and Distilled Liquor, Sixteenth to Eighteenth Centuries', in Roy Porter and Mikuláš Teich, *Drugs and*

controversial. According to Gehema, many wine merchants, brewers, innkeepers, and water sellers protested, fearing the decline in consumption of their ‘sulphur-poisoned, sour, or syrup-adulterated wines, salty, half-fermented beers, murderous cool drinks and deathly waters’, condemning tea as utterly useless and nothing more than a bit of water without any zest.⁷ Many physicians and apothecaries also objected that tea would increase the gall, and that water, if consumed frequently, would undoubtedly lead to dropsy.⁸ But due to his subsequent high standing in Germany, Bontekoe became internationally renowned as the ‘tea doctor’ and instigator of the cult of warm beverages, in which coffee and chocolate too ranked high.⁹ By the beginning of the eighteenth century, Bontekoe was known in the Netherlands as ‘our great Dutch tea-patron’ and his treatise called ‘that notorious tea-book’, passages of which were allegedly recited at tea parties ‘by heart’ and owing to which ‘nowadays no family or household can be found where tea, coffee, tobacco are not in use’.¹⁰ From the last quarter of the seventeenth century, coffee too was consumed to such an extent that Johann Heinrich Cohausen (1665-1750), highly regarded personal physician to the bishop of Münster in Westphalia, commented in 1716,

In our neighbouring Dutch localities coffee has nowadays become so common that even the peasants, their wives and daughters become accustomed to consume it daily and, no less than the towns-people, show every inclination for it. Hence the new fashion is everywhere the idol of women, especially if accompanied by pleasure and sensuality.¹¹

In Holland, at least, tea and coffee appear to have contributed to the general health of the public, for the Amsterdam surgeon Abraham Titsingh (1684-1776) testified in 1742 that

Narcotics in History (1995) 24-51; G. D. J. Schotel, *Het Oud-Hollandsch Huisgezin der Zeventiende Eeuw* (1904 [1868]) esp. chapters ‘Het Theesalet’ and ‘De Koffie en de Chocolate’.

⁷ Gehema, *Edler Thee-Tranck* (1686) 11.

⁸ *Ibid.*, 12.

⁹ In the 1680s, Bontekoe, for his unreserved advocacy of tea and coffee was regarded in medical and apothecaries’ circles as a ‘corrupter of the whole of northern Europe’. See Ulla Heise, *Kaffee und Kaffeehaus, Eine Kulturgeschichte* (1987) 38.

¹⁰ R.V.N., *Natuur-kundige Verhandelning van de Theé, Koffeé, Tabak en Snuf-poeders* [...] (Amsterdam, 1701) 11, 12, 114, 175.

¹¹ Johann Heinrich Cohausen, *Neothea, Oder Neu-angerichtete Medicinische Thee-Tafel, Auff welcher Fürtreffliche, so einfältig- als künstlich zusammen gesetzte, theils aus einheimisch-theils ausländischen Kräutern und Gewächsen bestehende Kräuter-Thee Denen Liebhabern der Gesundheit und langen Lebens aufgetragen und praesentiret werden* (Osnabrück, 1716; 1728; Lemgo, 1750) here 1716 edn., 158.

‘since our Bontekoe extolled the virtues of tea - and others the coffee-waters, there have not been as many inflammatory diseases in the Netherlands as before’.¹²

Bontekoe’s tea treatise, well known in the Dutch original and referred to in German works on the new beverages, was said to have been translated into German in 1686¹³ but was probably confused with the *Drey Neue Curieuse Tractätgen Von dem Trancke Cafe, Sinesischen The und der Chocolata*, formerly ascribed to Bontekoe because they were added to the German translation of his *Korte Verhandelng* [Kurtze Abhandlung], in 1686 and 1688. This European bestseller was, in fact, written anonymously by the French author Philippe Sylvestre Dufour (1622-87).¹⁴ Bontekoe’s *Gebruik en Mis-Bruik van de Thee* (1686), together with Blankaart’s treatise on coffee, appeared in German under Blankaart’s name as *Haustus Polychrestis oder: Zuverlässige Gedanken vom Thé, Coffée, Chocolate, und Taback, mit welchen der grosse Nutzen dieser ausländischen Wahren so wol in gesunden als Krancken Tagen gründlich und umständlich gelehret wird* (Hamburg, 1705; 1708).¹⁵ Its translator, the Hamburg physician and able linguist Johann Lange asserts that only very few had realized the errors of the ‘ignorant learned’ - the ‘fashion- and title doctors’, and had tried to lead the way out of the labyrinth of their false opinions by putting medicine on a ‘completely different basis’. Their example had shown that ordinary things could compete with the most expensive remedies, and that tea and coffee, among others, were ‘able to break the power of the most severe illnesses’. Not a universal remedy but ‘polychrestic’ [multi-purpose], their ability to dispel the viscosity of the body fluids (caused by a thickening of the blood and *lymphae* in illness) and promote the *principia hydraulica* of the body with a subtle sulphur and a very volatile salt, made them ‘a murderer of many plagues, a balm to the body and preserver of our health’.¹⁶

Before 1680, the new beverages appear to have been little known in Germany, at any rate outside cosmopolitan centres such as Hamburg, as they are not discussed at

¹² Baumann, *Cornelis Bontekoe*, 114.

¹³ No German title given by both Vandeveld, ‘Bijdrage [...] Bontekoe’, 87, 96-7 and Lindeboom, *Dutch Medical Biography*, 207.

¹⁴ The *Traitez Nouveaux et curieux du Café, du Thé, et du Chocolate* contains direct translations of early European treatises on the subject (1st anonymous French edn. Lyon, 1671). Between 1671 and 1705, at least twelve editions appeared in France, Germany, England and Switzerland, anonymously or under the name of Jacob Spon or Philippe Sylvestre Dufour (German transl.: Budissin: Friedrich Arnst, 1686, 1688, 1692); For all known editions see the postscript by Ulla Heise in a facsimile edition of the *Drey Neue Curieuse Tractätgen* (1986 [1686]) 1-47; See also Schnyder- v. Waldkirch, *Wie Europa den Kaffee entdeckte*, 220-2.

¹⁵ The Leiden university library copy of the *Haustus Polychrestis* (1705) is an exact translation of *Gebruik en Mis-Bruik van de Thee*. See also Vandeveld, ‘Bijdrage [...] Blankaart’ (1924) 480-1.

¹⁶ Blankaart, *Haustus Polychrestis* (1705) Preface.

that time in a medical work on the physical constitution of the Germans by the physician and polyhistor Hermann Conring (1606-81) at Helmstedt who lamented the heavy drinking habits of his compatriots.¹⁷ The Dutch were the first to introduce coffee to Germany, notably in Hamburg (1671)¹⁸ and Bremen (1673).¹⁹ By 1680, it has been claimed, coffee was consumed at the Elector's court in Brandenburg.²⁰ Chocolate, mainly from Venezuela and elsewhere in Spanish America, was also imported from Holland, and one of the Elector's personal physicians, Joannes Elsholtz (1623-88), refers to its composition after an Amsterdam patent with additives such as 'Canaries-sugar, cinnamon, aniseed, bitter orange, American pepper' or, of particularly pleasing flavour, with 'ambergris'.²¹

Elsholtz, in his *Diaeticon* (1682), comments on the contemporary foreign literature on coffee, chocolate and tea, including Bontekoe 'recent' work, and the new habit of tea drinking, remarking that in Europe tea was now drunk 'not only during and between meals within the family but also among friends and at noblemen's courts where, thenceforth, anyone who has business there is presented with it as soon as he has been seated'.²² As Elsholtz specifies no German sources, nor claims personal acquaintance with the new beverage, it would appear tea was not consumed at the Brandenburg court before Bontekoe's arrival in 1683. The Berlin physician Johann Daniel Gohl (1675-1731), and Reimmann, in 1713, confirm that Bontekoe was the first to introduce tea to Brandenburg-Prussia.²³ After Bontekoe had, verbally and in writing, so highly commended it with 'many huge accolades, and extolled its virtues to the healthy and sick as an infallible remedy against the *Scharbock* from which all other diseases are supposed to originate, its usage has become so widespread', Reimmann reports, 'that I believe, after tobacco, no other foreign herb can easily be found of which yearly such an amount

¹⁷ Johann Wilhelm Petersen, *Geschichte der Deutschen National-Neigung zum Trunke* (1782) 126, 128, 157. Petersen quotes Conring's *De habitu corp. germ.*, 1666 edn., 111.

¹⁸ Günther Schiedlausky, *Tee, Kaffee, Schokolade, Ihr Eintritt in die europäische Gesellschaft* (1961) 15.

¹⁹ Petra Seling-Biehusen, 'Kaffeetrinken in Bremen - ein gelungener "Versuch"', in Ulla Heise, *Süße muß der Coffe sein! Drei Jahrhunderte europäischer Kaffeekultur und die Kaffeesachsen* (1995) 17-31, here 17-19.

²⁰ Schotel, *Oud-Hollandsch Huisgezin*, 393.

²¹ Joannes Elsholtz, *Diaeticon: Das ist Newes Tisch-Buch Oder Unterricht von der Erhaltung guter Gesundheit durch eine ordentliche Diät, und insonderheit durch rechtmäßigen Gebrauch der Speisen und des Geträncks* (Cölln an der Spree, 1682) 329-30.

²² *Ibid.*, 324-6.

²³ Zedler, *Universal Lexicon* XLIII (1745) 530; Reimmann, *Versuch* (1713) 634; See also *Novellen aus der gelehrten und curiösen Welt, darinnen die Quintessense mannigfaltiger Gelehrsamkeit [...] enthalten*, 6 vols. (Frankfurt, Gotha, Leipzig 1692-7) Jan. 1692, 100; Bontekoe's successor, Theodor Craanen, is also said to be 'one of the first who, with his Cartesian-Sylvian system, made tea drinking in Germany popular'. See Ersch and Gruber, *Allgemeine Encyclopaedie*, part 1, XX, 75.

is consumed as this sent to us by the Chinese and Japanese'.²⁴ Reimmann denies Bontekoe's medicine had no proper foundation, affirming the qualities, powers and effects of tea had been 'very carefully specified' in Bontekoe's *Kurtze Abhandlung* as a corrective for many ailments. Even Bontekoe's critics had to admit that he had 'alleviated the Elector's Podagra'.²⁵ Due to the 'extremely beneficial' effects of tea on the Elector's afflictions with gout and the 'stone', the 'well-deserved praise of tea', asserts Gehema, 'subsequently resounded in Germany, not only at the courts of many rulers, but also among persons of lesser ranks and among the citizenry'.²⁶

The exotic hot beverages had a revolutionary effect on people's drinking habits. They offered a 'sober' (non-alcoholic) alternative to beer, wine and spirits which, for want of clean water, were consumed at all times of the day throughout Europe, often starting with a beer soup in the morning,²⁷ beer being an indispensable mainstay both as a beverage and food particularly in the northern and eastern parts.²⁸ But whereas beer, wine, and brandy, and even whey and buttermilk had to be drunk in moderation, tea and coffee, Bontekoe argued, could be imbibed in such quantities that 'one could be free of thirst all day long', for there was no need to be afraid of clean warm water'.²⁹ Before the advent of beverages made with boiled water, dehydration, in order to avoid the inebriating effects of alcohol, is likely to have been a health problem;³⁰ alcoholism, however, was an acknowledged evil. By the mid-seventeenth century, in the wake of the Thirty Years War, drinking habits and customs had developed such that refusal to drink someone's health or honour, or other honorific causes, was considered an affront, drinking sprees and competitions were customary, and children, for lack of suitable alternatives, were given alcoholic drinks from an early age.³¹

In a study on the drinking habits of the Germans and changes brought about by tea, coffee and chocolate, Johann Wilhelm Petersen (a friend of the poet Schiller) explains how, over centuries, these deeply rooted drinking customs became a 'national

²⁴ Reimmann, *Versuch* (1713) 634.

²⁵ Ibid. 635.

²⁶ Gehema, *Edler Thee-Tranck* (1686) 14.

²⁷ H. G. Adrian, R. L. Temming, A. Vollers, *Das Teebuch, Geschichte und Geschichten, Anbau, Herstellung und Rezepte* (1983) 39-40; For effects of tea and coffee consumption on beer production and the decline of the breweries, see Israel, *Dutch Primacy*, 338; Jan de Vries and Ad van der Woude, *Nederland 1500-1815, De eerste ronde van moderne economische groei* (1995) 377-80.

²⁸ Zedler, *Universal Lexicon* III (1733) 1789.

²⁹ Bontekoe, *Tractaat* (1679) 274-5.

³⁰ Cook, *Trials of an ordinary Doctor*, 86.

³¹ Petersen, *Geschichte* (1782) 121-6; Hasso Spode, *Die Macht der Trunkenheit, Kultur- und Sozialgeschichte des Alkohols in Deutschland* (1993) 68-74.

inclination', noting that 'a new, more decent devil had to be found to drive out the prevailing booze-devil', and that he 'did come in a more acceptable form, albeit slowly, with chocolate, tea and coffee'.³² Many of Bontekoe's contemporaries initially opposed his advocacy of drinking tea not just as a medicine but at any time of the day, and defended beer above all other drinks for daily use, since most people's lifestyle 'demanded' consumption of large amounts of fluids, their diet consisting largely of salted and preserved meat and fish.³³

By 1686, however, the fashionable new beverage had already gained such popularity in Germany that according to a *Acta Eruditorum* review of the *Traitez Nouveaux et Curieux du Café, du Thé, et du Chocolat*, there was no need to comment further on tea, it being 'so well known and, as it were, an everyday commodity'.³⁴ Petersen, though appalled by the former prevalence of alcoholism, was nevertheless ambivalent in his attitude to the now massive consumption of the new beverages. Like many others, he associated the introduction of tea, coffee and chocolate with 'effeminacy and indulgence'. 'King Frederick', he wrote in 1782, 'was still brought up with beer soups, but the children of thousands of his subjects were already raised on coffee.' Like Cohausen, he complains that this 'epidemic' was not confined just to cities but spreading also to the peasants and labouring day-workers. Gradually, in his view, this 'tea-and coffee quaffing' spoilt health and spread 'womanish indolence and over-sensitiveness, ruined many households, eroding the calibre of the nation, every year draining around twenty-four million *Gulden* out of Germany'.³⁵

A principal argument against tea and coffee was the high cost of importing these commodities, chiefly via Holland. The financial advantage the Dutch derived thereby caused envy and resentment with complaints that 'the Dutch, Walloons and French carry the best of German money in millions into their countries and in return supply silk rags, tea, coffee, confectionary, porcelain, and other childish trifles'.³⁶ The rapid rise in tea, sugar and tobacco consumption helped prompt and, at the same time, directly clashed with, the new German mercantilist economic doctrines vigorously propagated from the 1670s onwards. These considered the existing pattern of trade highly disadvantageous to the German states, and a form of exploitation profiting foreigners, strongly advising the

³² Petersen, *Geschichte* (1782) 127-8.

³³ See, for example, R.V.N., *Natuur-kundige Verhandeling* (1701) 29-35.

³⁴ *AE*, March, 1686, 156; Petersen, *Geschichte*, 127-8.

³⁵ Petersen, *Geschichte* (1782) 130.

princes to take urgent measures to stop the burgeoning outflow of cash to pay for these goods.³⁷

In order to dispel prejudice and promote tea consumption, Bontekoe's ally Gehema wrote several works in its favour. His *Wett-Streit der Chinesischen Thea mit dem warmen Wasser Calida. Worauff das hocherfahrne Podagra den Endspruch giebet* (Berlin, 1685; 1686) is dedicated to the Great Elector, Friedrich Wilhelm, and his consort Dorothea. In entertaining rhyming verse *Thea* boasts that she can easily dissolve the 'piercing agonies' of the 'Stone', thoroughly defeat the 'hellish Podagra', and swiftly overcome legions of diseases. *Calida* defends the use of European herbs such as 'Ehrenpreis, Waßer-Bethonie, Löffelkraut, Dreiblatt, Kresse, Cichorien' to cleanse the blood, but tea is the winner and *Podagra* admits defeat.

The dedication of Gehema's *Edler Thee-Tranck, Ein Bewehrtes Mittel zum gesunden und langen Leben* (Bremen, 1686; 1687), to the Lutheran minister Caja Wilhado Strömer, preacher under the Swedish Crown at the Saint Petri Church in Bremen from 1680-1696,³⁸ is a typical example of his endeavours to promote philosophical and medical reform, and a reminder that in Germany, and elsewhere, much of the impact on popular culture of basic Cartesian ideas and the new medicine resulted from sermons.³⁹ Gehema appeals to Strömer's intelligence and wisdom, stating that the next grade to human perfection and so-called world-wisdom is attained through discarding the wrong instructions and prejudice received from parents and teachers, as well as opinions adopted without sufficient reason, and, in Cartesian fashion, accepting as true only what has been conceived through forming an unequivocal, indisputable concept backed up with many supporting experiments.⁴⁰ Unlike many medical doctors with preconceived ideas, unable or unwilling to see the light of truth, Gehema considers Strömer not only a 'great preacher' but also 'exceptionally enlightened in medicine' and thus uniquely qualified to persuade the often inexpertly treated sick among his congregation not to entrust themselves to ignorant, unscrupulous tormentors but to intelligent and rational physicians and practitioners. By warning them of the 'harmful and highly dangerous

³⁶ [Anonym.] *Die Verschlemmerte und bezauberte Coffe-und Thee-Welt [...]* (Schwabach, 1737) Publisher's preface and 283-91.

³⁷ Israel, *Dutch Primacy*, 382-90; Gagliardo, *Germany*, 143.

³⁸ Heinrich Wilhelm Rotermund, *Geschichte der Domkirche St. Petri zu Bremen [...] bis zum Jahre 1828* (1829) 204; In contrast to most of Northern Germany, Dutch Cartesian and Cocceian influences were particularly strong in Bremen. See, for example, Smit, 'Buitenlandse studenten', 276; Israel, *Radical Enlightenment*, 461, 665.

³⁹ Geyer-Kordesch, *Pietismus*, 119-20 note: 251, 123-4.

⁴⁰ Gehema, *Edler Thee-Tranck* (1686) 2.

methods of murderous blood-letting, emaciating purgatives, obscene and nasty enemas, deathly juleps and collapse-provoking heart-tonics', and converting those who wish to lead a long and healthy life to the great health-aid Tea, Strömer, as a faithful shepherd, and great enthusiast and patron of the 'noble preservative and [...] divine nectar', would thus guide his flock not only to the 'clear well of Israel' but also to the 'wellspring of sensible remedies'.⁴¹

One minister of the Reformed Church, the Dutch D[ominee] Alardyn (1658-92) at Arnhem, needed no prompting and thought it appropriate to adapt the new social reality to theological priorities, exalting the *Vergeestelijkt en hemels thee-gebruik* 'spiritually adjusted to Jesus Christ for the removal of worldly and idle talk during tea drinking'. Published in 1696, this small treatise also appeared in German translation in Calvinist Bremen in 1697.⁴² God should be praised, suggests Alardyn, for providing such means that 'not only please the soul but also refresh and promote the health of the animal spirits and limbs of the human body'.⁴³ In an elaborate analogy he compares the 'spiritual extract' to be drawn from the virtues of this drink to the higher Christian virtues, enabling one to 'contemplate Jesus Christ in tea' through its nature and form, its effect and benefit, and its proper use.⁴⁴

Tea, though a plant of unprepossessing appearance with dried and twisted leaves, Alardyn holds, is nevertheless of great value. Jesus, like the lowly and despised yet potent plant 'Ysop' [hyssop] alluded to in the Old Testament, also humbled himself, became 'fruit of the earth' while at the same time a divine being from heaven.⁴⁵ Echoing Bontekoe and Blankaart, Alardyn maintains that tea banishes sleepiness, drunkenness and headaches, dries 'vapours in the brain', sharpens the mind, makes eyes 'bright', 'strengthens the sight', and thus enables people to function more effectively at work. Man without Jesus, in Alardyn's analogy, is like someone in a deep sleep with eyes closed before the 'Light of Truth', resembling a drunk living deprived of his senses and reason, his mind filled with heavy vapours and shrouded in the 'mist of idle delusion'. Jesus, by cleansing the sinner, makes him zealous for good works.⁴⁶ Tea purges the body

⁴¹ Gehema, *Edler Thee-Tranck* (1686) Dedication.

⁴² D. Alardyn, *Geistlich- und Himmlischer Thee-Gebrauch Oder kurtz eingefassete Vorstellung Von dem Thee, Geistlich auf Jesum Christum zugeeignet, Zur Wegnehmung der Weltlichen und eitelen Reden unter dem Thee-Trincken* (Bremen, 1697).

⁴³ *Ibid.*, 8.

⁴⁴ *Ibid.*, 9-10.

⁴⁵ *Ibid.*, 10-12.

⁴⁶ *Ibid.*, 13-25.

of ‘phlegm and [bodily] waste’, quenches thirst better than beer or wine, awakens desire for food and nourishment and is altogether ‘pleasant and delightful’. Jesus, on entering man’s heart, purifies his corrupted desires, makes him crave the heavenly ‘manna’ and fulfils the needs of his soul.⁴⁷ Similarly, as tea needs to be kept in a closed container to preserve its strength, the favour and love of Jesus must be preserved in man’s soul with the utmost care.⁴⁸ To benefit from its potency, tea must be prepared with hot water; Man, to attain bliss and consolation, must drink the spiritual waters of Jesus – the water of his blood, shed in obedience and sacrifice, and water of His spirit for the cleansing of his soul.⁴⁹ Just as tea is first taken out of need for health reasons, and mixed with sweet and pleasant additives until a preference for the pure unadulterated taste is reached, man initially has no desire for Jesus, then begins to recognize his need for him through the ‘light of reason granted by God’ until he can no longer live without him. But, Alardyn warns, just as the first extract of tea is the strongest and most delightful, the serious, ardent faith, love and zeal at the beginning of man’s relationship with Jesus later becomes more sluggish and weak. Tea, he advises, must be drunk regularly, or the desire for it weakens. Likewise, we must ‘make use of Jesus at all times in order to remain strong and useful, living water’.⁵⁰

Against the biased view making the rounds in Berlin that tea causes dropsy, Gehema published a short refutation⁵¹ and dedicated it to the influential Brandenburg minister Eberhard von Danckelmann, appealing to the latter’s (and thus the general reader’s) ‘good sense’ to recognize that tea was a cure instead. Like so many diseases, dropsy was thought to evolve from ‘a thick and sluggish blood’ whose cure consisted of ‘tempering and thinning the sour blood and body fluids, improving the circulation in order to open all obstructions and drive out the surplus moisture through the sweat or urine, and to keep the restored blood flow warm and subtle’.⁵² Hot tea, containing an excellent *sal volatile oleosum* (a volatile salt) was therefore the perfect choice, a view also defended by Waldschmidt who elaborated on the virtues of tea in his tract on ‘Tea, the protector of the

⁴⁷ Alardyn, *Geistlich- und Himmlischer Thee-Gebrauch* (1697) 26-31.

⁴⁸ Ibid., 35-8.

⁴⁹ Ibid., 39-40.

⁵⁰ Ibid., 42-6.

⁵¹ J. A. Gehema, *Thee-Geträncke Curiret, verursacht aber nicht Die Wassersucht* (Berlin, 1687; 1688); [Schwann, in *Janusz Abraham Gehema*, 43, notes 15 and 17, also lists a *Schreiben an Herrn Eberhard von Danckelmann, dass das Thee-Geträncke die Wassersucht nicht verursache, sondern vertreibe* (Berlin, 1688), and *Thee-Geträncke Verursacht keine zitterende Glieder sondern stärcket und befestiget solche [...]* (Stade, 1687) [not seen]].

home and military health' in virtually the same terms as Bontekoe, stating, 'Bontekoe has answered the objections concerning dropsy very successfully and I myself have not met anyone who could argue anything sensible against it'.⁵³

A review of the *Epistolae* (1689) on medical and philosophical issues between Waldschmidt and his friend Dolaeus in one of the popular opinion-forming German language journals, the *Monatliche Unterredungen* (1689), examines Waldschmidt's 'unique [tea] remedy' which, he claimed, 'can keep the body free from all illness while deferring all purging, blood-letting, cupping, *fontanellae* and other such things devised for the ruin of humanity', and has proved to be 'the best, before all others, in curing the gout, desperate colic and other severe illnesses'.⁵⁴ The discussion of tea as a panacea explores opposing views for the benefit of the discerning reader. One participant, also rejecting blood-letting and purging and 'other such medical tortures', especially as 'Bontekoe and other distinguished physicians are in agreement about this', expresses interest in consulting Waldschmidt on the question of tea.⁵⁵ Dolaeus, in his letters to Waldschmidt citing the corrupting properties of tea on the stomach and intestines, is shown progressing from initial scepticism to conversion in favour of tea due to Waldschmidt's convincing arguments.⁵⁶ A discussion of Waldschmidt's *Thee Domi Militiaeque Valetudinis Custos*, in a later 1689 issue of the *Monatliche Unterredungen*, reflects popular opinion which readily accepts a recommended [tea] remedy even if unpersuaded by the [Cartesian] philosophy behind it, arguing that any doctor's cure is acceptable, be he a 'Hippocratean, Galenist, Chymicus, a Sennertian, Cartesian, Peripatetic or even a Stoic', providing it works.⁵⁷

That tea, coffee and chocolate should be drunk as hot as possible (to retain their flavour) was a novel concept, since food and drink were previously 'rarely taken hot at the table'.⁵⁸ An issue much-discussed in both the Latin and vernacular medical literature was how the use and abuse of these 'hot liquors' would affect the constitution. A frequently voiced prejudice attributed symptoms of various illnesses to the regular

⁵² Gehema, *Thee-Geträncke* (1687) 3-5. Other authors oppose this view. See, e. g., Schroeer, *Kurtze Gedancken* (1696) 43-6.

⁵³ Johann Jacob Waldschmidt, *Thee Domi Militiaeque Valetudinis Custos, Das ist: Gründlicher Bericht, wie ein jeder, dem seine Gesundheit lieb ist, das Thée nicht allein zuhause gebrauchen, sondern wie auch ein Soldat sich im Felde darmit preserviren könne. Auch ob und was für Medicamenta bey dem Thée-Wasser nöthig seyen* (Frankfurt, 1689), in Waldschmidt and Dolaeus, *Epistolae* (1689) 181-204.

⁵⁴ *Monatliche Unterredungen* (1696) Feb. 1689, 168-79.

⁵⁵ *Ibid.*, 170.

⁵⁶ *Ibid.*, 170-7.

⁵⁷ *Monatliche Unterredungen* (1708) Oct. 1689, 998-1004.

drinking of tea. The translator of Blankaart's *Borgerlijke Tafel* (1683), Georg von Keyl, professes to have seen 'no-one who has drunk tea for thirty years or more who could claim it prevented him from catching any diseases but, to the contrary, people for whom it was most detrimental'.⁵⁹ Keyl refers to the renowned Thomas Willis as maintaining that 'those inclined towards headaches, dizziness, and palpitations, trembling of the limbs and stupidity [Dummheit], feel worse from drinking coffee' and that oat- and chervil soup agrees better with them.⁶⁰ According to the popularly still prevailing humoral theory of health and disease, bodies and foodstuffs were made up of the four elements air (cold), fire (hot), water (moist), earth (dry). 'Each food or drink was assessed to determine its heating, cooling, drying qualities and could, if necessary, be adjusted with additions to make them more compatible.' Tea and coffee were generally considered hot and drying and basic chocolate cool and drying. The addition of pepper, saffron, cinnamon, cloves, aniseed, cardamom, vanilla, amber essence, sugar, milk, egg-yolks, Spanish or Rhenish wine to chocolate (or of liquorice, fennel seed, coriander, lemon peel, juniper berries, rosemary to tea, to mention just a few) were thought to produce a more 'temperate and wholesome drink, less reactive to the constitution'.⁶¹

Yet, why drink imported foreign tea or coffee at all if one could substitute coffee with roasted wheat, barley or oats and make a wholesome tea with native plants?⁶² The tea drunk in Holland, Lower Saxony and at some German courts for health reasons and in order to economize on wine, argues Keyl, could be substituted by equally good or better native herbs such as 'betunia, melissa, rosemary, thyme, or sage, particularly by people who cannot afford tea at 8-24 *thaler* in Germany'.⁶³ Keyl here echoes most German medical writers on tea, coffee and chocolate who, although not denying the health-giving properties of the new foreign beverages, rather recommend homegrown herbs which are considered equally good or better. The quality of the tea leaves sold in Germany was, in any case, often suspect and varied in colour, smell and taste, 'sometimes pleasant, at other times tasting like soap, like bread cut with a knife used for dissecting herrings, or like foul bacon, dirty and slimy, so that the warm water takes on

⁵⁸ Brown, *Praise of Hot Liquors*, 65.

⁵⁹ Blankaart, *Speise- und Tisch-Buechlein* (1695) 57.

⁶⁰ Ibid., 60.

⁶¹ Brown, *Praise of Hot Liquors*, 25-6.

⁶² See, for example, R. V. N., *Natuur-kundige Verhandeling* (1701) 83,145; *Sammlung von Natur- und Medicin*, Dec. 1717, 446-9.

⁶³ Blankaart, *Speise- und Tisch-Buechlein* (1695) 55-7.

the taste and colour thereof'.⁶⁴ Hearsay had it that the Dutch boiled tea leaves first before sending them to Germany and it was well known that good tea was 'rarely obtainable from apothecaries, as the leaves have already been boiled several times and thus robbed of their best potency'.⁶⁵ An often quoted story, used as convincing evidence to expose the presumed benefits of tea as imaginary, was that of a nobleman who invited the Elector and his whole court to tea, but served them hay seeds boiled in water instead without anyone noticing the deception.⁶⁶

While Cohausen expresses opposition to the widespread notion of tea as a panacea in his *Neothea* (1716), said to have caused a 'great sensation in Westphalia and Holland',⁶⁷ he grants that Chinese tea, 'if used simply, on its own, has not infrequently been of great help with headaches' and specifically mentions the 'Tulpios, Blancardos, le Boists and Bontekoisten' who had written about its merits, including Johann Jacob Wepfer (1620-95), city physician at Schaffhausen, who rated 'demulcentia', such as tea and coffee, above all other medicines, and Wedel who had cured an 'obstinate headache' by prescribing a combination of tea and sweating for three days.⁶⁸ 'Admittedly', concedes Cohausen, 'oriental tea leaves do have an effect with some chest ailments but pale before our native ones, whatever Bontekoe and his followers may boast.'⁶⁹ Despite his objections, he allows that Bontekoe, the 'famous water-drinker' who spread the reputation of Chinese tea 'ad nauseam', had cured various people suffering severe intractable colic for many months with copious amounts of tea and his 'tempering powder' mixed with opium. He agrees that tea and warm water are great diuretics and 'diffuse wind, dissolve the sharp salts, rinse the kidneys, thin the mucus, get rid of sandy material and cool burning kidneys'.⁷⁰ Equally, Cohausen acknowledges the neutralizing effect of Chinese or other herb teas in the intestines by means of their volatile alkaline salt, in maintaining the proper composition of the [alkaline] gall and hence 'powerfully averting all sorts of afflictions of the bowels'.⁷¹ To a recently wed husband worried about his wife's melancholic state which he attributed to 'black gall', Cohausen's therapeutic advice was

⁶⁴ Johann Theodor Jablonski, *Allgemeines Lexicon der Künste und Wissenschaften* (1748) 1199.

⁶⁵ *Monatliche Unterredungen* (1696) Feb. 1689, 173.

⁶⁶ *Ibid.*, 174; See also, for example, Septimo Podagra, *Profitable Apotheker-Tod* (1721) 64.

⁶⁷ Hermann Paal, *Johann Heinrich Cohausen 1665-1750, Leben und Schriften eines bedeutenden Arztes* (1931) 21.

⁶⁸ Cohausen, *Neothea* (1716) 40, 240.

⁶⁹ *Ibid.*, 140, 98.

⁷⁰ *Ibid.*, 205-6; 260.

⁷¹ *Ibid.* 205-6.

to allow her to resume her premarital lifestyle and let her drink tea, coffee and chocolate regularly following her previous habit.⁷²

Friedrich Hoffmann, while critical of Bontekoe's and Blankaart's acid-alkali theories, was generally in favour of tea and coffee (if consumed in moderation), claiming he 'could name very many diseases cured solely through the use of tea and other balsamic boiled herbs'. Discussing the beneficial properties of the new warm beverages, even if, like a number of medical writers, attributing much of their remedial effect to the 'warm water', Hoffmann concludes that tea in particular is indeed an excellent means of dispersing thick and slimy body fluids, maintaining the blood flow, and ridding the body of all 'rough and sulphurous' products, thus proving the 'best tempering, blood-cleansing, and *Scorbut* curing remedy' – the single most convincing reason why medical doctors of his day praised it to 'high heaven' as a 'means to continuous good health over many years, as a preservative against gout and the stone, a stimulant to eating and drinking, aiding natural evacuation [...] and keeping body and mind in good condition'.⁷³

Theodor Zwinger (1658-1724) professor of anatomy, botany, and medicine at Basel, as well as city physician, recommended correcting an overindulgence in diet with fasting and drinking 'tea, coffee and "indian" chocolate, and, after drinking to excess, tea or coffee'.⁷⁴

Dutch as well as German authors appreciated the nutritious potential of chocolate, particularly for strengthening weak and cold constitutions, and as an aphrodisiac, one author esteeming a 'single cup of warm chocolate, even just boiled with water in the simplest manner, above fifty cups of tea or coffee'.⁷⁵ Although considered a pleasant, healthy drink, good for thin people and newly weds in producing good blood and body fluids and increasing the semen, according to Keyl, chocolate was in Germany not higher regarded than other cooling and nourishing beverages such as a well-prepared capon-chicken- or veal broth. Where, however, asks Keyl sarcastically, 'should the extra money *not* spent on French clothes go if not on foreign dainties, even if a German countryman has to raise all he can to remain fashionable in foreign eyes'?⁷⁶ His medical colleague Johann Gottfried Kühne in Breslau, on the other hand, felt that Blankaart [in the *Haustus*

⁷² Cohausen, *Neothea* (1716) 238.

⁷³ Friedrich Hoffmann, *Eigentliche Untersuchung* (1696) 16-19.

⁷⁴ Theodor Zwinger, *Unterricht, ein hohes Alter zu erlangen [...] und durch welche Mittel der Mensch noch heut zu Tage sein Leben über hundert Jahr bringen könne [...]* 2nd edn. (Nordhausen, 1727) 97, 99.

⁷⁵ [Johann Christoph Ettner], *Des Getreuen Eckarths Medicinischer Maul-Affe Oder der Entlarvte Marckt-Schreyer [...]* (Frankfurt, Leipzig, 1720) 197.

⁷⁶ Blankaart, *Cartesianische Academie* (1690) 380; Blankaart, *Speise- und Tisch-Buechlein* (1695) 61.

polychrest] had not emphasized chocolate's outstanding qualities quite enough and considered it as much a staple as daily bread.⁷⁷ Extolling its virtues in Bontekoe-fashion, he quotes Bontekoe unacknowledged, claiming that 'an ounce of chocolate contains more nourishment than a pound of meat',⁷⁸ and affirms its acid-tempering properties, as well as assuring the reader 'it produces neither gall, mucus, acidity, salt, nor obstructions'. On the contrary, chocolate was especially effective in countering 'cachexia, dropsy, liver and spleen diseases, diarrhoea, gout, fever', also 'rachitis', and beneficial for breast-feeding women and children.⁷⁹

Though Bontekoe was reproached for having endowed the new warm beverages with 'too much miraculous power', and for exalting tea on the title page of his tea-treatise as 'the medicine of our time, serving those who desire to live longer, healthier and wiser',⁸⁰ few authors, even among his Stahlian critics, actually denied the beneficial, health-promoting qualities of tea, coffee or chocolate if drunk in moderation. Johann Samuel Carl indeed commended the warm water drinks tea and coffee for their thirst quenching quality in fevers, for promoting gentle elimination, particularly through perspiration, and being equally useful for renal colic. In such cases, he reports, 'many imbibed only tea and other watery drinks and felt as well as if they had taken a miracle-cure'.⁸¹ But many warned against the dangers of immoderate use, including the Montpellier physician Daniel Duncan in his influential treatise *Wholesome Advice Against the Abuse of hot Liquors, Particularly Of Coffee, Chocolate, Tea*. Duncan contends:

Suppose Coffee, Chocolate and Tea to be either Cold or Hot [...] it cannot but be destructive to such as are Cold or Hot enough already. If Coffee be subtil it must needs be hurtful to Cholerick Persons whose Humours and Spirits are too subtil already; and if it be thick or gross those that are of Phlegmatical and Melancholy Constitutions, over whose Humours and Spirits that Quality has too much power, can never have any Benefit by it.⁸²

⁷⁷ Kühne, *Vollständige Nachricht* (1717) 4, 37.

⁷⁸ See above, ch. V, 180.

⁷⁹ Kühne, *Vollständige Nachricht* (1717) 34-60.

⁸⁰ *Monatliche Unterredungen*, Feb. 1690, 112; *Sammlung von Natur-und Medicin*, Dec. 1717, 450.

⁸¹ Johann Samuel Carl, *Von der Diaet vor Gesunde und Krancke: zu gründlicher Anweisung [...]*, 3rd edn. (Büdingen, 1728) 186-7, 252-3.

⁸² Daniel Duncan, *Wholesome Advice Against the Abuse of hot Liquors, Particularly Of Coffee, Chocolate, Tea, Brandy And Strong-Water. With Directions To know what Constitution they Suit, and when the Use of them may be Profitable or Hurtful* (1st French edn.: Rotterdam, 1705; English: London, 1706; German: *Von dem Mißbrauch heißer und hitziger Speisen [...]* (Leipzig, 1707), here Engl. 1706 edn., 33.

He protests, 'To pour [...] hot Liquors into our Bodies is not to put Oil to the Lamp of Life, but to increase the Match which hastens the Consumption of the oily Moisture [blood] that nourishes the Vital Flame.'⁸³ The almost universal abuse of hot coffee, chocolate and tea, formerly only taken as medicines, but now made delicious with added sugar, held Duncan, poisoned the body by 'burning the tufts of the Mouth, and the Stomack', thus destroying the taste buds and appetite, and by making the blood 'too sharp, too hot, too subtil and too thin', thereby preventing absorption of nutrients, causing inflammation of the liver and spleen, corrosion and rupturing of the vessels, inducing bleedings and converting 'all the Blood into Water, because it breaks the Parts of it by the great Shock they endure in the great Agitation which the Ebullition occasions in it'.⁸⁴

In the *Tractatus Medico-Historicus De Tribus Imposteribus* (1731), the Stahlian Michael Alberti, under the pseudonym 'Andronicus', aired his 'candid thoughts' about the popular new beverages tea and coffee which he exposes as 'notorious seducers of the people' under the 'medical disguise' of a universal medicine conducive to health and longevity. He acknowledges the good qualities of warm water which extracts the strength from tea leaves and coffee beans, aids the blood flow, digestion and evacuation, and, in contrast to alcoholic beverages, helps people to 'keep their wits together'. Among the serious disadvantages of hot tea and coffee he considers the increase in body perspiration - less beneficial in colder countries where warmer clothing retains the moisture, so that frequent warm drinks occasion 'such damp brothers and sisters to put their bodies into a perpetual, extraordinary vaporous state', which in cold weather was bound to lead to coughs, colds, headache, and cold sweats, thus causing them to 'fall from one weakness into another'.⁸⁵

⁸³ Duncan, *Wholesome Advice* (1706) 18.

⁸⁴ *Ibid.*, 36, 72, 118-21, 133.

⁸⁵ Michael Alberti [pseud. 'Andronicus'], *Tractatus Medico-Historicus De Tribus Impostoribus oder Freymüthige Gedancken von Denen drey berühmten Verführern des Volcks: Dem Getränk des Théé und Coffée [...] zur Warnung und Vermeidung* (Cosmopoli [Rostock], 1738; 1756 [1731]) here 1738 edn., A1, 7-11, 14-26; See also R.V.N., *Natuur-kundige Verhandelung* (1701) 49-50, 83; Johann Gottlob Krueger, *Gedancken vom Caffee, Thee und Toback* (Halle, 1743) 24.

ii) Sugar – the ‘Hypocritical Enemy’

The ‘depraved, superfluous use of sugar’ in ‘disgusting quantities’ associated with tea, coffee and chocolate drinking in Europe, particularly among women who ‘above all take an immense delight in sugar, and love it enormously’, also met with strong condemnation, as its sweet, pleasant taste belied its corrosive, injurious properties.⁸⁶ John Chamberlayne, in translation also read in Germany, blamed chocolate’s alleged ill-effects on the ‘great superfluity of its sugar, which often fills up half its Composition’ and, in his view, ‘may destroy the Native and Genuine Temper of the Chocolate, Sugar being such a corrosive salt, and such a Hypocritical Enemy to the Body’. Simon Paulli, Chamberlayne states, considered sugar to be ‘one cause of our English Consumptions; and Dr. Willis blames it as one cause of our Universal Scurvy’.⁸⁷

Bontekoe and Blankaart particularly stress the harmfulness of sugar and sugary preserves, those eating large quantities being, in their view, often troubled by worms, obesity, and *Scharbock*.⁸⁸ According to Keyl, sensible physicians in the Netherlands no longer prescribed sugary cakes and preserves, as long experience had shown that they added nothing to curing the patient but rather worsen and prolong illness. Keyl commends the reform of apothecaries in the Netherlands by Dutch physicians and urges the desirability of this happening throughout Germany as well, where some free cities and town councillors who own and let apothecary shops, are ‘too keen on the murder and blood money extracted therefrom, especially as the sour and salinic diseases such as *Scharbock* with its legions are rampant in Lower Saxony and Westphalia, just like in the Netherlands, and also rather touching upon Upper Germany’.⁸⁹ Some thirty years later, an Augsburg contemporary noted that sugar was ‘much less used by apothecaries now because doctors prescribe it less’.⁹⁰

The Leipzig medical writer Johann Christoph Schroer (1669-1716) agrees with Bontekoe and Blankaart that tea is of little benefit if much sugar is added, ‘for all sweet things produce sharp, acidic humours, from which evolve countless diseases’, such as the

⁸⁶ Bartholomeo Belli, *Kurtze, Jedoch sehr Accurat und Nützliche Beschreibung Der Thee, Coffe und Choccolate* [...] (Leipzig, 1695) A3.

⁸⁷ John Chamberlayne, *The Natural History of Coffee, Thee, Chocolate, Tobacco* [...] *With a Tract of Elder and Juniper-Berries, Shewing how Useful they may be in Our Coffee-Houses: And also the way of making MUM With some Remarks upon that Liquor, Collected from the Writings of the best Physicians and Modern Travellers* (London, 1682) 16.

⁸⁸ Bontekoe, *Werken* (1689) I, 233-4; Blankaart, *Borgerlyke Tafel* (1683) 100, 102.

⁸⁹ Blankaart, *Speise- und Tisch-Buechlein* (1695) 23.

Scharbock, as well as ‘rendering them more virulent and lengthy’.⁹¹ According to Johann Peter Albrecht, ‘No physician nowadays doubts that sugar, even if transmitting to the nerves and fibres of our tongue a sweet sensation on account of its particular texture, contains a great deal of Sour in its bosom.’ Too much sugar is not only deleterious to health, Albrecht warns, but also causes worms because flies, loving sweet things, might lay their eggs on it which are then ingested by humans.⁹² Sugar, he admits, makes tea and coffee taste nicer, so that ‘if you forbid people to take it, they stop drinking tea’.⁹³ In their ‘primary cultural setting’ tea, coffee and chocolate were drunk without sugar, but in Europe, it has been suggested, due to a ‘long-standing familiarity with sweetened beverages and medicines since the Middle Ages’, it is ‘conceivable that the sweetening of the drug drinks – coffee, chocolate, and tea – became customary not only because they were bitter as well as unfamiliar, but also because the habit of adding sugar to beverages was an old one’.⁹⁴

In Germany, as in the Netherlands, England and other parts of Europe, the huge increase in sugar imports during the late seventeenth and early eighteenth century was driven by the rapid growth in tea, coffee and chocolate consumption. Tea especially became the most popular because it underwent the sharpest fall in price.⁹⁵ The spectacular rise in demand for refined sugar could not only be readily met but led to a further rapid decline in the price of sugar owing to the enormous expansion of the sugar plantations in the Caribbean and Surinam.⁹⁶ Cheaper and more abundant sugar encouraged tea and coffee drinkers to sweeten their beverages still more. It is therefore not surprising that physicians began to worry about the effects of this and became less inclined to consider sugar a medicinal aid.

⁹⁰ Septimo Podagra, *Profitable Apotheker-Tod* (1721) 84, 88.

⁹¹ Schroeer, *Kurtze Gedancken* (1696) 11.

⁹² Albrecht, *Klar-Entdeckte Unschuld* (1696) 119; Kühne, *Vollständige Nachricht* (1717) 64-5, repeats Albrecht’s points (and words) unacknowledged.

⁹³ *Ibid.*, 118.

⁹⁴ Sidney W. Mintz, *Sweetness and Power, The Place of Sugar in Modern History* (1986) 100-1, 109, 137.

⁹⁵ De Vries and Van der Woude, *Nederland*, 379.

⁹⁶ *Ibid.*, 552-55; Israel, *Dutch Primacy*, 390, Steensgaard, ‘Growth and composition’, 132-40, esp. 138.

iii) 'Clearly Discovered Innocence' of Tea and Coffee

While some remained firmly convinced of the detrimental effects of the new exotic hot beverages on the body and extremely sceptical of their health-maintaining properties, others, like Johann Peter Albrecht defended the 'clearly discovered innocence of the [...] unjustly denounced drinks tea and coffee' as health-promoting, strengthening remedies. Replying, in 1696, to an anonymous Dutch work against tea- and coffee drinking,⁹⁷ he commends 'certain profound Dutchmen' who had 'thoroughly investigated the nature of tea and coffee and taken pains to report their findings'.⁹⁸ Albrecht sees the cause for the anonymous author's outright rejection of tea and coffee, and indiscriminate dismissal by others, as envy or 'biased hatred of the famous D[r]. Bontekoe whose skilful pen, above all others, vastly contributed to tea and coffee coming more and more to our attention, and to whom, above all, we are indebted that these beverages have gained such repute'.⁹⁹ Albrecht claims to have drunk tea or coffee 'daily for the past eighteen years', since 1678, and that ten to twelve cups after his morning visits to patients had enabled him to continue his work for the rest of the day.¹⁰⁰ He also had observed 'hundreds of times' that patients, plagued by thirst during fevers and other illnesses, were better helped by tea and coffee than beer, cooling drinks or almond milk.¹⁰¹

The January 1692 issue of the monthly journal *Novellen aus der gelehrten und curiösen Welt*, published in Frankfurt, Gotha, and Leipzig (1692-7), offers a useful perspective of late seventeenth century opinion on the influence that tobacco and the new beverages tea, coffee and chocolate had on German drinking habits and on diet, as well as reflecting pro-Bontekoe and Sylvio-Cartesian physiological theories current at that time. The journal comments on changes in German habits concerning health and leisure. Formerly known, along with the Dutch, English, Danes, and Swedes, as 'notorious boozers', they now required tobacco to promote salivation, and tea, coffee, and chocolate, instead of sherbet, thus emulating the Chinese, Japanese, Persians, Turks and [Indian]

⁹⁷ Albrecht's book *Klar-Entdeckte Unschuld* [...] contains the German translation of the anonymous Dutch work *Klarer und nacketer Beweis von dem grossen Mißbrauch des Fremdben und ausheimischen Thees und Coffees; worinnen unwiedersprechlich erwiesen wird/ daß sie nicht zur Gesundheit, sondern vielmehr zu Kranckheiten und Verkürzung des menschlichen Lebens dienen, auch folglich derer Gebrauch zu grossen Nachtheil eingeführet sey*.

⁹⁸ Albrecht, *Klar-Entdeckte Unschuld* (1696) Preface.

⁹⁹ Ibid. 38-9.

¹⁰⁰ Ibid., 72.

¹⁰¹ Ibid., 53.

Americans who kept the beneficial body fluids in ‘vigore’, hence preventing illnesses ‘originating from a blockage of inner body parts’, and remaining in excellent health and free from diseases like *Scharbock*, corruption of the body fluids, the stone, consumption, and colic.¹⁰² In favour of the new beverages (mentioning, inter alia, well-known authors such as Joan Nieuhof,¹⁰³ Friedrich Hoffmann, and Bontekoe), the journal deems hot chocolate in winter ‘not unhealthy and to be rated above Spanish wine, brandy and soup’. Brandy, admittedly, ‘contains a fire and warms the body’ but is ‘more harmful than useful if taken in large quantities in that its causticity tears, constricts and blocks the small subtle tubes of the body, and consumes the essential body fluids, resulting in putrefaction of the intestines, consumption and dropsy’.¹⁰⁴ Although soup provides good nourishment, a hot chocolate not only warms more so but imparts to the body a ‘virtual and lasting heat by means of the cinnamon, the cocoa itself and the sugar’, and good sustenance if mixed with ‘good milk, wine or eggs’.¹⁰⁵

The journal’s discussion about the virtues of tea in the popular dialogue-form used also in the *Monats-Gespräche* and *Monatliche Unterredungen*, contrasts the views of a so-called ‘good Theeist and Bontekoeist’ and two ‘Atheeisten or Tea-Enemies’. The latter’s scepticism as to whether imbibing ‘so much water’ is at all useful or ‘inevitably causes dropsy’, and their conviction that the heat and astringent properties of tea dry out the body instead of increasing its vigour and induce consumption, are discredited in favour of tea. Whereas cold water, beer and wine ‘thicken and paralyze the body fluids, and obstruct, occlude or tear its many small tubes and pores’, tea with its ‘inherent salts’ has ‘unique and wonderful opening, emollient qualities’ that heal rather than cause dropsy and consumption.¹⁰⁶ As persuasive evidence are cited the ‘praiseworthy’ Bontekoe’s *Kurtze Abhandlung*, Gehema’s discussion about wine, beer and water drinking,¹⁰⁷ a Latin tea treatise of the Kiel physician and professor of medicine Johannes Nicolaas Pechlin (1644-1706), as well as Waldschmidt’s *Epistolae*. Most physicians in Germany, reported the *Novellen*, repudiated Bontekoe’s advocacy of tea,¹⁰⁸ but, stated the journal, ‘it is not at all surprising that the late Bontekoe and his followers are greatly

¹⁰² *Novellen*, Jan. 1692, 91-2.

¹⁰³ *Ibid.*, 94; Nieuhof [Neuhof] wrote a famous account of the Chinese imperial court (1665).

¹⁰⁴ *Novellen*, Jan. 1692, 87-8.

¹⁰⁵ *Ibid.*, 88.

¹⁰⁶ *Ibid.*, 96-7.

¹⁰⁷ J. A. Gehema, ‘Ein Gespräch vom Wein-Bier-und Wasser Trincken’, in Gehema, *Edler Thee-Tranck* (1686) 40-122.

¹⁰⁸ *Novellen*, Jan. 1692, 96.

maligned for their introduction and commendation of the herb tea, particularly by the *vulgo medicorum* and *medicastrics* who could easily foresee that by its introduction many a urine glass would remain empty'. Such 'hatred' was, however, 'by no means universal', and in sympathy with Bontekoe and his adherents the *Novellen* reflect:

Such persecution has to be endured by all reformers and those who, in all kinds of trades and professions, introduce something against the usual grind, such as Luther in religion, Descartes in philosophy, Copernicus in astronomy, Grotius, Hobbes and Pufendorf in *doctrina morali*, and the incomparable Thomasius in *omni jure et philosophia*, with whose example Bontekoe and his faithful followers can well console themselves.¹⁰⁹

iv) Bontekoe - A 'Curious Saint'

A polemical discourse, entitled *Der profitable Apotheker-Tod in dem frembden Kräutlein Thee samt seiner Medicinischen Sackpfeiffe*, published in Augsburg, in 1721, under the pseudonym Septimo Podagra, vividly illustrates how divided opinion remained about Bontekoe's fervent advocacy of tea. Bontekoe is called 'that curious saint who has come up with a long rigmarole about the "excellent herb tea" and, together with his followers, after boiling this outlandish herb, solemnly proclaimed, "Oh, ye apothecaries, death in your pots!", convinced that if everyone drank only tea instead of using other remedies, apothecaries would die of hunger.¹¹⁰ (Tea hence became known in some circles as 'apothecaries' death').¹¹¹ Discussing their colleague Doctor Podagra who is taking a tea cure, drinking tea 'day and night', Doctors Primus and Secundus surmise that Bontekoe will be discredited if the cure is unsuccessful. Their discussion rehearses the often repeated arguments in the tea literature of the time, such as scepticism about the powers of tea, since (unlike beer, valued as both food and drink) 'warm water does not give you strength' but 'debilitates the stomach',¹¹² the use of 'exotica' instead of equally acceptable native herbs,¹¹³ and the negative health consequences of the increased sugar

¹⁰⁹ *Novellen*, Jan. 1692, 97-8.

¹¹⁰ Septimo Podagra, *Profitable Apotheker-Tod* (1721) B 4.

¹¹¹ *Ibid.*, 221; R.V.N., *Natuur-kundige Verhandelinge* (1701) 174; Baumann, *Cornelis Bontekoe*, 155-6.

¹¹² Septimo Podagra, *Profitable Apotheker-Tod* (1721) 23-4, 30.

¹¹³ *Ibid.*, 46-50, 132, 136, 143.

consumption connected with tea, there being ‘only few who drink tea without sugar in Germany’.¹¹⁴ An apothecary’s objection that tea, taken as a daily medicine, might prevent other remedies from working effectively in illness, as the stomach, used to ‘medicinzing’,¹¹⁵ will accept it like food, are offset by Secundus insisting that ‘tea keeps people healthy, maintains the body’s natural warmth, precipitates the rising vapours and makes *allegro*’. ‘I believe’, he muses, ‘I would not have become a doctor if I had not drunk so much tea’.¹¹⁶

That Bontekoe’s standing as a much acclaimed court physician and his boastful claims about tea did not fail to influence peoples’ drinking habits, is obvious from Podagra’s remark that his own frequent use of tea is due to ‘great braggarts who let themselves be called world-famous’.¹¹⁷ If Bontekoe, who ‘treats tea like a goddess’, was not accepted on his own authority, the Frenchman Petrus Peteti [Pierre Petit], Pechlin and Waldschmidt also supplied supportive evidence.¹¹⁸ For all their mockery of the ‘stupid Bontekoe’ and his ‘child’s prattle’, hailing tea a cure-all, Primus and Secundus must concede that tea is drunk not only at court and by wealthy burghers but also by artisans and soldiers, and in such quantity that had they ‘as much tea as has been drunk in Germany in the last thirty years or so, the Lüneburg Heath could be fertilized with it ten times over’.¹¹⁹

In 1743, the Stahlian Johann Gottlob Krueger (1715-59), professor of medicine at Halle (1743) and later Helmstedt (1751),¹²⁰ and a very popular medical author, declared:

It would give me singular pleasure if I could eliminate these heathen and Turkish inclinations from the heads of my countrymen and persuade them to use water, milk, wine and beer, after the manner of their worthy forefathers. I would tell them that there was no need to send their money to China or the Levant, that they can find similar things in their own country they could use when necessary. But I do understand that all my proofs are in vain and would nowhere near find the approval Bontekoe enjoyed who extolled these beverages to the world, the reason being that he had taste and vanity on his side and I have only reason.¹²¹

¹¹⁴ Podagra, *Profitable Apotheker-Tod* (1721) 84.

¹¹⁵ *Ibid.*, 55, 194.

¹¹⁶ *Ibid.*, 51.

¹¹⁷ *Ibid.*, 125.

¹¹⁸ *Ibid.*, 35; On Pierre Petit, see below, 213-14.

¹¹⁹ Podagra, *Profitable Apotheker-Tod* (1721) 71, 143.

¹²⁰ *HBL* 2nd III, 619.

¹²¹ Krueger, *Gedancken* (1743) 15.

v) A New Sociability

Tea and coffee, prized for their alleged medicinal and almost ‘magical’ properties, as universal remedies for all kinds of ailments, and for their enlivening effect on body and mind, had with the wide-spread introduction of coffee-houses throughout Europe gained great popularity as a vehicle for a new kind of informal sociability.¹²² As with tea, there are numerous literary references to coffee in Germany, France, and England, providing substantial evidence of coffee’s appeal as an object of scientific interest and as an exotic fashion article, bestowing social distinction, encouraging new kinds of conversation and styles of courtesy, and valued as a sobering stimulant.

The social and moral implications of these (exclusively male) meeting places, where social standing, national, and religious barriers were set aside for the sake of ‘edifying and learned conversation, noble, useful and pleasant acquaintances, also reading or hearing the latest news, or otherwise promoting one’s own or a neighbour’s good cause and welfare’,¹²³ were welcomed by many as intellectually improving and emancipating, and perceived by others as morally suspect, pernicious, and corrosive of the social hierarchy, where even ‘weavers and tailors’ could indulge in the ‘coffee- and tea craze’.¹²⁴ One German author, weighing the advantages and drawbacks of coffee houses, decided on their ‘outstanding’ merits:

Even if some foolish people do not know any better than to daily spend their time lazing about in coffee houses in order to while away their inheritance through idleness, they do only little or no harm to anyone. For coffee keeps them within the bounds of reason, and even if they occasionally indulge in one or two fancies while smoking a pipe of tobacco, these are nothing but sheer joys of being, consisting in sweet imaginings and contemplation of higher things they will never be capable of attaining.¹²⁵

By contrast, an anonymous Dutch satire, *De Gedebaucheerde en Betoeverde Koffy-en Thee-Weereld* (Amsterdam, 1701), rendered into German in 1737, deplored, the title

¹²² Coffee houses, also serving tea, chocolate, as well as spirits, were first opened in Paris (1643), Venice (1645), Oxford (1650), London (1652), Marseille, Amsterdam, Hamburg (1671), Nürnberg (1684), Regensburg (1686), Frankfurt am Main (1689), Leipzig (1694), Würzburg (1697), Berlin (1721). See Schiedlausky, *Tee, Kaffee, Schokolade*, 13, 15, 31-2.

¹²³ Zedler, *Universal-Lexicon* V (1733) 171f.

¹²⁴ [Anonym.] *Verschlemmerte und bezauberte Coffe-und Thee-Welt* (1737) 278-9.

¹²⁵ [Anonym.] *Kaffe- und The-Logia, oder Kurze Anzeigung und Beschreibung dieser Geträncke: Worinnen enthalten, wie die Liebhaber des Caffee- und The-Trinckens sich aufführen, und ihre Wasser-Debauchen auff den Caffee-Häusern verrichten* (ca. 1690) 15-16.

claims, the ‘debauched and bewitched coffee-and tea-world, containing a great number of nice goings-on that within a short time took place at coffee and tea parties in Amsterdam, Rotterdam, The Hague, Utrecht, and neighbouring localities, among the married and unmarried, with all the debauchery and irregularities which under pretext of these insipid drinks are being practiced; together with a calculation of the yearly damage caused by this coffee and tea consumption, as well as the porcelain-ware, and all the other trumpery going with it’.¹²⁶ Under cover of propriety, women, considered the worst culprits, supposedly subverted morality and good conduct with their domestic ‘coffee- and tea banquets’ which provided men and women with a thousand and one opportunities for ‘forbidden love and many dissolute proceedings’, including extravagant expenditure, to the ‘ruin of the household and the great detriment of the common good’.¹²⁷ By exposing the dangers of the Dutch example, the translator hoped to curb these habits in Germany, urging parents to watch over their daughters, men over their wives, and the authorities to stop such ‘pernicious epidemics and goings-on’.¹²⁸

Of a very different opinion was ‘Madame Leucorande’ whose ‘thorough and agreeable proof that an honourable woman, without injury to her reputation, could now and then appear at coffee circles, yes, should also smoke a pipe of tobacco there’, is an excellent example of women’s quest for a more liberated life-style without offending the rules of propriety. Women, she insists, benefited from the invention of so-called ‘Caffeé-Schmäußgen’, which enabled them to come together on an acceptable social basis with the added advantage of becoming better informed about economic household management: ‘No one can deny that a well-chosen assembly is like a well appointed school, where much can be learned in sensible discussions about husbandry that can save a man a few dozen *thaler* a year.’ If women had wanted to stay at home, like in a Carthusian cell, she argues, they might as well have become nuns.¹²⁹

Coffee, held ‘Madame Leucorande’, was in any case much more essential for women than men, their bodies containing more moisture. Coffee helped this wet abundance and ‘in our Leipzig’, she asserts, ‘there are consequently not so many girls with green cheeks

¹²⁶ [Anonym.] *De Gedebaucheerde En Betoverde Koffy-en Thee-Weereld* [...] (Amsterdam, 1701).

¹²⁷ [Anonym.] *Verschlemmerte und bezauberte Coffe-und Thee-Welt* (1737) 6, 20, 282-4; R.V. N., in *Natuur-kundige Verhandeling* (1701) 103, refers to the spreading tendency of tea leading brandy as a ‘sister in tow’, as both were often consumed in tea-circles, thus encouraging drunkenness, particularly among women who had fallen prey to this habit with dire consequences for ‘innumerable households’.

¹²⁸ *Verschlemmerte und bezauberte Coffe-und Thee-Welt* (1737) Translator’s Preface.

because they are used to drinking several cups of coffee daily as a general medicine which keeps their blood healthy and, where necessary, opens it up so they become healthy mothers later'.¹³⁰ Extolling the virtues of tea and echoing Bontekoe's list of benefits from his tea-treatise, 'Madame Leucorande' dismisses prejudiced notions about tea causing a weak stomach or dropsy as 'simple-minded' and commends Bontekoe and Waldschmidt to anyone with an inclination to read more on the subject.¹³¹ She assures the reader, 'Had I as much time and space as willingness, I would demonstrate irrefutably how tea could be made into a truly universal medicine which in most, if not all, diseases would be of incomparable service', adding that 'nothing harmonizes so well with the life spirits as tea which is evident from the way it makes people lively and alert'.¹³²

An anonymous Dutch author, re-examining the arguments for and against tea, coffee and tobacco, applauds the works of Bontekoe on tea and Blankaart's on coffee, and agrees that these beverages, the 'brain-sublimate' of women, enliven their minds, heighten their discourse and speed up their housework, thus releasing them to read and learn more about all sorts of issues, including politics, so that their sensible, not to say edifying, discourses during their tea or coffee circles often put a cultured man to shame.¹³³ Not only do they render excellent services to the body, but for women especially, the author argues, they are equally important for other reasons. Until the advent of tea and coffee, women had been in the world only to 'serve the whims of men and to bear children, wind them and give them pap and, apart from that, spent their time scouring and scrubbing, talked of pots and pans, and went to church as ignorants and simpletons'; and that, except for some knowledge of fashion, was all they got to know throughout their lives. Though one can learn these things by the age of seventeen or eighteen, the author protests, 'men mock women saying that after that age their intellect does not develop further but comes to a standstill'.¹³⁴ Women had 'reason to protest against and curse such a custom' and it seemed heaven had heard their prayers, sending them tea from China and coffee from Arabia,

¹²⁹ Leucorande [pseud.], *Gründlicher und Anmuthiger Beweis, Daß ein Honnetes Frauenzimmer ohne einige Verletzung ihrer Renoméé Bißweilen bey den Caffée-Schmäußgen erscheinen könne, Ja sie möge und solle auch Eine Pfeiffe Taback darzu schmauchen*, 2nd edn. (Leipzig, 1715) 12-15.

¹³⁰ Ibid., 67-8.

¹³¹ Ibid., 58-61.

¹³² Ibid., 57.

¹³³ R.V.N., *Natuur-kundige Verhandelinge* (1701) 5, 178.

¹³⁴ Ibid., 178.

thus paving a way for us to frequent society with our men and to curb their gadding about, or rather tavern-going. Now we will attain the proper sociability, the principal aim for which women were created (*Genesis* 2, verse 20), and in this way acquire knowledge of all kinds of things, including matters of state. And all this without wasting time, money or neglect of our concerns. For what time-wasting is there if sowing and knitting, or needlework, the principal tasks of a diligent housewife, can very readily be done over a cup of tea? Nor does it waste money, indeed, it teaches thrift, for a cup of water is easily come by and if, for the sake of a good friend, a nip [of brandy] follows, what does it matter? It also makes slack women more assiduous, because tea and coffee make cheerful and one can never think about one's tasks more attentively than after a few cups of this most blessed women's-herb.¹³⁵

Women's initially much maligned 'tea and coffee-circles', a substitute for the (male) coffee houses, in fact, created a kind of 'miniature bourgeois salon', where informal aestheticized discourse between the sexes can be said to have promoted the emancipation of women as equal partners in conversation and social activities.¹³⁶ In the wider context, it has been argued, the great sobering agents tea and coffee had an enormous impact on people's ability to think and work more rationally. Unlike alcoholic beverages, their stimulating effect enhanced acumen and concentration, vigilance and the ability to work longer hours. In an increasingly complex urban society, run along technical and rationalistic lines, coffee is said to have acted as a 'catalyst and indicator of a new state of being, was the drug of Protestant ethics, rationalism and the Enlightenment'.¹³⁷ Presumably, Waldschmidt's frequently cited ode 'Es wollen die Potentaten', recommending hot tea water to potentates burdened with 'millions of tons of worries about the state of Europe', to the 'ladies' ('Trincket Thee ihr Dames') to remain young, to the 'Herren Politici', the 'Herren Geistlichen', the 'Officirer', 'Medici', 'Philosophi', and 'Studiosi', in fact, to any professional for the efficient execution of their duties, was so popular during the Early Enlightenment because it captured the spirit of the new age.¹³⁸

The treatise *Thea Sive de Sinensi herba Thee Carmen*, by the French author Pierre

¹³⁵ R.V.N., *Natuur-kundige Verhandelinge* (1701) 179-80.

¹³⁶ Hasso Spode, 'Der Grosse Ernüchterer. Zur Ortsbestimmung des Kaffees im Prozess der Zivilisation', in Daniela U. Ball (ed.), *Kaffee im Spiegel europäischer Trinksitten. Coffee in the Context of European Drinking Habits* (1991) 219-34, here 226-7.

¹³⁷ *Ibid.*, 224-26.

¹³⁸ Waldschmidt, *Thee Domi Militaeque* (1689) 203; Reprinted, among others, in *Monatliche Unterredungen*, Oct. 1689, 1002-3; *Sammlung von Natur-und Medicin*, Dec. 1717, 450-1; Zedler, *Universal-Lexicon* XLIII (1745) 536.

Petit (Leipzig, 1685; 1695; 1749), listing all the authors writing on tea, including Bontekoe's *Tractaat van het Excellenste Kruyd Thee*, contains a frequently quoted pamphlet on *Der Thee Begräbnüß, und Glückliche wieder Aufferstehung* [tea's funeral and happy resurrection], which mockingly testifies to the enduring character of this cultural debate initiated by Bontekoe. In this tract the goddess 'Thea' lies on her death bed. No longer a panacea or nectar, granting eternal life, she is poured away, laughed at, forgotten - the false idol has fallen. The world *wants* to be deceived, but chemistry, the undeceived explorer of nature, has unmasked her. Warm or cold, she has no strength. Her 'salty' nature is very suspicious, contains no sulphur, no magnetic powers. The life-prolonging medicine has so far been kept alive by its reputation throughout the world, or rather, sheer imagination fed by idleness. Born out of curiosity, wrapped by the midwife into artificial rhymes, fed by avaricious merchants, grown through flatterers' applause, she became big and proud through the high esteem of noble gentlemen until holy respect for the truth cast off the slavish yoke of heresy. Is her reputation completely dead or is her spirit still wandering about? In *Der Thee Aufferstehung* [the resurrection of tea], the pamphlet urges: If you don't want to stink of '*Scharbockish rot*' and be buried alive, let 'Thea' die for your sake by dissolving into healing balm. Even her ashes are a complete medicine, therefore invite your house gods for a few dozen cups of tea. Whatever Chemistry has to say, all arguments have been turned round in favour of 'Thea'.

If people's health improved in some ways as a result of Bontekoe's enormous influence on the consumption of warm beverages, as claimed by Titsingh, others, like the Königsberg medical professor Metzger, blamed the 'new dietetics' for the changes in the 'system of prevailing illnesses'. In place of the formerly wide occurrence of bladder stones and inflammatory fevers, Metzger attributed the increase in gallstones, gastric and other chronic ailments, especially nervous diseases, to Bontekoe's unconditional recommendation of tea, coffee and chocolate which, in his view, did not earn him an *Ehrenkenmal* [memorial of honour] in the history of medical science.¹³⁹ That in Göttingen, around 1750, renal stones were 'extremely rare' was also observed by Albrecht von Haller. In 240 dissected bodies he discovered only one stone in the kidney and one in the ureter whereas, like Metzger, he found that gallstones were 'frequent

¹³⁹ Metzger, *Skizze* (1792) 322.

enough'.¹⁴⁰ In Hamburg, by contrast, according to Johann Jacob Rambach, gall stones did not occur very often but, like Metzger and Von Haller, he found that 'stony concretions' in the urinary passages, previously very frequent, had in more recent times become rarer 'as one drinks more tea than beer'.¹⁴¹ Rambach also asserts an increase in 'nervous diseases' and 'irritability' which he ascribes to tea drinking, as the 'nerve fibres, macerated by tea water, more easily succumb to every harmful force, unlike with our forefathers who only knew beer and did not thirst for a perpetual stimulant'.¹⁴² Considering the controversies surrounding the new tea and coffee culture, it is not surprising that the new beverages are blamed for some of the supposedly new disorders when, in fact, as Michael Neves points out, 'commercial and urban society might itself turn out to be the chief cause of many forms of sickness, including a renewed emphasis on mental illness and diseases of the nerves'.¹⁴³

vi) Tobacco - A Universal Medicine

In the latter half of the seventeenth century, tobacco, along with the fashionable new beverages tea, coffee and chocolate, became a highly praised medicinal aid to prolong health, life and well-being, as well as a controversial panacea. Bontekoe's advocacy of tobacco smoking for women was eagerly taken up by some authors in Germany. According to 'Madame Leucorande', tobacco smoking among women in a politically and socially rather conservative Germany, was generally considered improper.¹⁴⁴ But, she asserts, 'blowing smoke is nothing reprehensible, or one would have to forbid women blowing on soup as well, and winters would have to be abolished altogether, as smoke [breath] is best seen in cold air'. She further contends it was only women's 'habitual simple-minded modesty' that robbed them of the 'noble' tobacco. Justification for such 'women's debauchery' could be found in those same [tea and coffee drinking] 'water-circles' in which they participated without giving men cause for complaint.¹⁴⁵

It was surprising, 'Madame Leucorande' muses, that men had not already long ago

¹⁴⁰ Römer and Usteri, *Herrn von Hallers Tagebuch* II, entry:1750, 11-12.

¹⁴¹ Rambach, *Versuch* (1801) 320.

¹⁴² *Ibid.*, 322-3.

¹⁴³ Michael Neves, 'Conclusion', in Conrad et al, *The Western Medical Tradition*, 477-94, here 491.

¹⁴⁴ Leucorande, *Gründlicher und anmuthiger Beweis* (1715) Preface, A5.

¹⁴⁵ *Ibid.*, 12-19.

advised women to acquire the (smoking) habit, as this would be of much benefit to them. A miser would realize that the sharp salt, inherent in tobacco, would wean women off sweet dainties, pastries and confectionery. A man with ambition would have the advantage of a wife made increasingly cleverer through tobacco's spirit who, were he to invite a group of worthy men, would be able to detain them longer with her sensible discourse. A lustful man, however, would profit most. On coming home from a tobacco-collegia, his dear wife would be much more inclined towards him and favour him with kisses than if she was not used to tobacco-smoke.¹⁴⁶ Women were as good or even better than men and therefore at liberty to make use of this noble panacea. In England and France it was already *grand mode* for ladies to smoke publicly in the company of *chevaliers*, and no-one thought badly of it, let alone in Holland, where it was already so common that even peasant-maids reinvigorated themselves with this potent remedy after a hard day's work.¹⁴⁷ Descartes, Waldschmidt and the 'world-famous Brandenburg *Rath* and Physician in Ordinary D[r.]. Cornelis Bontekoe' had, after all, shown that the body's health depended on the swiftest circulation of very subtle body fluids and that illness and death resulted should they coagulate, become sluggish, glutinous, and acidic and thus obstruct the blood vessels.¹⁴⁸

Bontekoe, despite his extravagant inference of all illnesses from this condition, his so-called *Scharbock*, is quoted as *the* authoritative medical voice, 'because in questions of health, doctors are believed first and foremost'.¹⁴⁹ One of the noblest properties of tobacco, a very volatile salt, known to draw the phlegm from the lung, stop the cough, thin and cleanse the blood, was therefore of 'great benefit to pale maidens', women with ailments of the womb, and generally to all women who tended to sit a lot. As it was particularly commended to students who also sat a lot, it could not be considered a sin against the sixth commandment if women used the student tobacco.¹⁵⁰ As tea, coffee, chocolate, and especially tobacco, of which their 'sober debaucheries' consisted, were highly beneficial to maintaining health, tobacco being the best means to focus intellect and reason for deep contemplation, the exploration of truth and pursuit of virtue by

¹⁴⁶ Leucorande, *Gründlicher und anmuthiger Beweis* (1715) 41-2.

¹⁴⁷ Ibid., 32-5; Georg A. Brongers, in *Nicotiana tabacum, The History of Tobacco and Tobacco Smoking in the Netherlands* (Groningen, 1964) 195, quotes Bontekoe saying that women of North-Holland and Gouwland 'puffed away at their pipes like blazes and carried flint and steel and tinder-boxes about with them'.

¹⁴⁸ Leucorande, *Gründlicher und anmuthiger Beweis* (1715) 44.

¹⁴⁹ Ibid., 47.

¹⁵⁰ Ibid., 46.

sharpening and enlivening the mind, refreshing the senses and keeping the whole body active, even the most honourable women, 'Madame Leucorande' insists, should be allowed to smoke a pipe of tobacco, there being nothing indecent in the shape of a tobacco pipe either.¹⁵¹

One anonymous author, refuting all of her claims, apart from allowing women occasionally to drink tea, coffee, and chocolate, flatly denies women equal status to men and insists on men's God-given right, validated by nature, to exercise their power and authority over women on account of the Biblical saying, repeated in all marriage ceremonies, 'He shall be your master'.¹⁵² Bontekoe's 'authority' was, at any rate, 'not so high that one would have to be afraid of him', the author asserts, for it was not unknown to anyone that the salt-and sulphur particles in tobacco fermented and bloated the blood and body fluids which occurred especially in the smallest vessels and chambers of the brain and therefore could not do much good. The author admits that heavy smoking among men was very common, that especially at university many reached for the pipe rather than the prayer book and even took it to bed with them; but it was surely questionable whether an honourable woman should adopt this foul habit.¹⁵³

Another 'sensible investigation of the question whether gallant ladies and other women should, like men, be allowed to smoke tobacco, and whether it be profitable to their health', a translation of the *Tabacologia*¹⁵⁴ by the Dutch physician Johannes Ignatius Worp, called Beintema van Peima, brushed aside all prejudices against it, declaring they could be 'toppled with one foot alone, considering that one single pipe can be of much benefit'.¹⁵⁵ According to a detailed 1691 review of Beintema's work in the *Monatliche Unterredungen*, Beintema 'follows the principles of Descartes and Bontekoe', maintaining that health consists of the proper circulation of the blood and that nothing promotes it better than tobacco.¹⁵⁶ Beintema's list of the merits of tobacco for the mouth, tongue, throat, stomach, womb, intestines, blood, brain, eyes and ears, chest and respiration, heart, lungs, spleen, liver and other parts of the lower anatomy,

¹⁵¹ Leucorande, *Gründlicher und anmuthiger Beweis* (1715) 18-19, 24, 51.

¹⁵² Olinde [pseud.], *Gründliche Untersuchung Des so genannten Anmuthigen Beweises Mad. Leucorandens Daß ein honettes Frauenzimmer ohne einige Verletzung ihrer Renommée bissweilen bey den Caffee-Schmüsschen erscheinen könne* (Frauenburg, 1715) 23.

¹⁵³ *Ibid.*, 35.

¹⁵⁴ Beintema van Peima, *Tabacologia. ofte Korte Verhandeling Over de Tabak, Desselvs deugd, gebruyk, ende kennis: Waar door angeweesen wordt een wegh om lang, vroolijk, ende gezond te leven* (The Hague, 1690).

is as long as that of Bontekoe's catalogue of praise for tea. He recommends 'drinking' tobacco as often as desired, even up to twenty pipes per day and at any time, during summer and winter, accompanied by tea, coffee or chocolate, rather than 'harmful' cold water, beer or wine. As healthy air is a necessary requirement, and tobacco repels all putrefaction and curbs poisonous vapours, everyone, in Beintema's view, should be equipped with tobacco, it being 'almost the only means of keeping the body in good condition'. Women especially could forestall many illnesses in this way.¹⁵⁷

Some physicians adopted a more qualified view. Johann Gottlob Krueger considered it 'foolishness to proclaim tobacco a panacea but no less foolish to dismiss it altogether', as it appeased the hunger and thirst of soldiers on the battlefield, was effective against scabies, toothache and, above all, an excellent purgative.¹⁵⁸ Krueger, as a physician, knew from first-hand experience that 'the doctors with their pills have done more harm than good in the world', as violent purges weakened the stomach and bowels and prevented their movement so necessary for digestion, for a strong contraction of body parts was generally followed by a slack state. Krueger welcomed the trend among medicinal experts in recent times to employ more temperate purgatives which opened the bowels only gently. Their praiseworthy endeavour was only compromised by the fact that the frequently repeated use of these remedies rendered them ineffective so that increasingly larger doses were required.¹⁵⁹

Krueger stresses the crucial role Bontekoe in particular had played in popularizing tobacco in Europe. His commentary, published at Halle in 1743, both in German and French, and much later in Italian (Rome, 1847), confirms Bontekoe's importance over an impressively long period in justifying the regular and extensive consumption of tobacco. He commences his chapter on tobacco by declaring:

Tobacco lovers will have to pay tribute to the Dutch physician Bontekoe for making its use fashionable in Europe. For this man not only conferred distinction on Coffee and Tea with frequent high praise, but also on Tobacco, so that one might almost believe these things are a means to live hundreds of years in the most complete health. Bontekoe knew the secret of how to assail and capture the human

¹⁵⁵ Beintema, *Vernünfftige Untersuchung der Frage: Ob Galanten und andern Frauenzimmer nicht eben sowohl als denen Mannes-Personen Toback zu rauchen erlaubt und ihrer Gesundheit nützlich sey?*, 'new' edn. (Jena, Frankfurt, Leipzig, 1743) Preface, unpaginated.

¹⁵⁶ *Monatliche Unterredungen* (1704) May 1691, 337.

¹⁵⁷ Beintema, *Vernünfftige Untersuchung* (1743) 154, 164.

¹⁵⁸ Krueger, *Gedancken* (1743) 52, 55-6.

¹⁵⁹ *Ibid.*, 56.

temperament at its most vulnerable point [...]. But one has to allow everyone his due and choose the middle way, if one's aim is to attain truth. It would be quite wrong to consider tobacco a panacea, a remedy against countless illnesses, and the surest way to prolong life. But equally it would be a mistake if, in agreement with the otherwise learned Simon Pauli, one counted tobacco amongst the most damaging and disgusting things there are [...]. Experience has taught that Bontekoe accomplished more than Simon Pauli, and why should one be surprised at that? The former gave people hope of prolonging health and life. He recommended a commodity useful for enjoyment, as a pastime, and for pleasure, and thus gave the elite a way of distinguishing themselves from the common people, truly very weighty reasons to persuade people of something. Simon Pauli, on the other hand, instructs them to stick to their old habits, and how could this have satisfied their curiosity?¹⁶⁰

Simon Paulli (1603-80), professor of botany, anatomy and surgery at Copenhagen university and personal physician to the king of Denmark was, in fact, less averse to tobacco than generally reported.¹⁶¹ In one of his publications, *A treatise on tobacco, tea, coffee, and chocolate*, translated by the English physician R. James, Paulli considers tobacco a 'valuable herb', but calls its abuse 'intolerable' and 'highly noxious'.¹⁶² He does not deny that tobacco, 'when used with Prudence and Propriety, is a salutary Medicine [...], since I myself use it with great Advantage in the Spring and Autumn, at which Seasons I am afflicted with catarrhus Defluxions', but condemns the fact that 'vast Numbers of Europeans, without any Advice, greatly incommode and disturb the Brain, the Seat of their Reason, by using the highly penetrating Smoak of Tobacco at all times of the day and night and in all weathers', calling it a 'barbarous Custom, so fatal and prejudicial to Health'.¹⁶³

In Germany, tobacco became popular to such a degree that it was planted in many areas, notably around Hanau and the Palatinate, in the Mark Brandenburg, in Mecklenburg and the duchies of Cleves and Mark.¹⁶⁴ Tobacco particularly thrived in the areas around Bremen and Hanau, in Hesse, Frankfurt on Oder, Dessau and the duchy of Magdeburg which, according to some German authors, all allegedly produced tobacco of 'such quality that one can well advise against the foreign kind'.¹⁶⁵ Although there was

¹⁶⁰ Krueger, *Gedancken* (1743) 49-50.

¹⁶¹ Paulli's *Commentationes de abusu Tabaci et herbae Thee* (Rostock, 1635, Argentorati, 1661; 1665; 1681; Frankfurt, 1708) is mentioned in almost every publication on tea or tobacco [not seen].

¹⁶² Simon Paul[i], *A treatise on tobacco, tea, coffee, and chocolate* (London, 1734) 15.

¹⁶³ *Ibid.*, 25-6.

¹⁶⁴ Zedler, *Universal Lexicon* XXIV (1740) 646-7.

¹⁶⁵ H. J. G., *Das beliebte und gelobte Kräutlein Toback, oder allerhand auserlesene historische Merckwürdigkeiten vom Ursprung, Beschaffenheit, Würckung [...] des Tobacks, aus berühmter*

concern in some parts that fertile, well cultivated fields were used for growing tobacco instead of corn and that this might provoke an increase in grain prices, it was also claimed, ‘but for the tobacco growing introduced by the French into the Mark Brandenburg and around Magdeburg, to this hour many hundreds of acres would remain barren and uncultivated’.¹⁶⁶

The Netherlands also produced home-grown tobacco in eastern Utrecht and Gelderland. By 1675, Dutch tobacco production has been estimated at five to six million pounds per year.¹⁶⁷ A proportion of the German tobacco was exported unprocessed to Holland, much to the annoyance of informed German opinion. Several writers commented on the ‘foolishness’ of selling their unprocessed tobacco cheaply to the Dutch and then buying back the processed product, spun and blended, at great expense. ‘Sind das nicht Albertäten!’, asserts Zedler’s *Universal-Lexicon* article ‘Nicotian’ (1740). ‘Was mögen wohl die Holländer von dieser Deutschen Einfalt halten?’ [Are those not follies! What may the Dutch think of such German simple-mindedness?].¹⁶⁸ The Amsterdam tobacco workshops were skilled at blending American with locally produced tobaccos (both Dutch and German) in such a way as to provide a competitively priced product which had more flavour than German or Dutch tobacco on its own.¹⁶⁹ Not only in terms of flavour but also as a medicinal remedy German tobacco was generally considered ‘less powerful and useful than the American kind’.¹⁷⁰

Zedler’s article on tobacco provides an excellent account of its various names, origins, planting and processing techniques in Europe, trading practices and routes,¹⁷¹ as well as its medicinal virtues and dangers of abuse, listing numerous medical authors, old and new, and their findings, and those reported in journals such as the *Ephemerides Naturae Curiosae*, the *Acta Eruditorum* and *Breßlauer Naturgeschichten*.¹⁷² Among the first mentioned are Bontekoe and his high praise of tobacco in the *Kurtze Abhandlung*, followed by Gehema, Beintema, and others agreeing with him.¹⁷³ Tobacco’s ‘opening, warming, drying, diffusing, cleansing and healing power’, as well as ‘analgesic’, ‘anaesthetic’, ‘sleep-inducing’ and ‘purging qualities’ are attributed to its ‘sharp, volatile

Männer Schrifften gesamlet (Chemnitz, 1719) 19.

¹⁶⁶ Zedler, *Universal-Lexicon* XXIV (1740) 648, 655.

¹⁶⁷ Steensgaard, ‘Growth and composition’, 144.

¹⁶⁸ Zedler, *Universal-Lexicon* XXIV (1740) 650.

¹⁶⁹ Israel, *Dutch Primacy*, 265-6.

¹⁷⁰ Zedler, *Universal-Lexicon* XXIV (1740) 648, 651, 655.

¹⁷¹ *Ibid.*, 646-55.

¹⁷² *Ibid.*, 655-80.

¹⁷³ *Ibid.*, 656, also 672-3.

salt' and 'oil' (Sal volatile acre incisivum et resolutivum, et Oleum anodyno stupefactivum).¹⁷⁴ According to most authors, this made it a particularly useful remedy for persons of a 'cold' and 'moist' nature, prone to colds, catarrhs, coughs, headaches, tooth ache, its smoke drawing thick and viscous phlegm from the head or chest, and even 'purulent discharge from the ears', as commended especially by Friedrich Hoffmann.¹⁷⁵ The virtues of tobacco, asserted by Blankaart in his medical dictionary, were widely shared among physicians:

It resists Putrefaction, provokes Sneezing, and Vomits, is Anodyne, Vulnerary; being smoaked, stops Catarrhs, and disposes to Rest, takes off Weariness and Mother-fits, and is a good preservative against the Plague; a Gargarism of it cures the Tooth-ach, and dissolves Tumours of the Uvula, a Bath of the green Leaves applied cures of Leprosy, the Itch, and kills Lice, it heals Wounds, and cleanses Ulcers, and cures Burns. The Smoaking of it strengthens the Stomach, helps Concoction, and gently moves the Belly; but it is not good for People of an hot Constitution. The Pain of the Teeth is cured by stopping those that are hollow with calcined Tobacco; for the Palsie, take the green Leaves and infuse them in Malaga Wine, and rub the parts well with it, after sweating it is the best outward remedy for the Palsy.¹⁷⁶

Blankaart's further claims that chewing tobacco leaves prevented hunger and thirst, and fought obesity, were also asserted by Van Beverwijk, Craanen, and Overkamp.¹⁷⁷ Soaked in brandy they killed worms and alleviated colic, soaked in beer they caused violent vomits and thus often cured fevers.¹⁷⁸ The *Acta Eruditorum* (1692; p. 492) advised that application of the leaves ground with 'a sufficient quantity of fresh small raisins to the soles of the feet alleviates the heat in fevers'.¹⁷⁹ Pulverized tobacco taken in wine or fennel-water was a proven remedy against the stone but pronounced not altogether safe in the *Ephemerides Naturae Curiosae*, in some cases having lead to a 'coma somnolentum', or a cerebral stroke.¹⁸⁰ Tobacco juice, taken internally, acted as an antidote to poison, putrefaction, the *Scharbock* and dropsy. Applied externally it healed fresh and old wounds, fistulas and ulcers, cured cancer and, rubbed onto eyelids, made a fine eye ointment. Boiled in wine and laid on wounds the leaves allegedly numbed pain

¹⁷⁴ Zedler, *Universal-Lexicon* XXIV (1740) 656.

¹⁷⁵ Ibid., 656-7, 669, 672-9.

¹⁷⁶ Blankaart, *Physical Dictionary* (1708) 284.

¹⁷⁷ Zedler, *Universal-Lexicon* XXIV (1740) 657.

¹⁷⁸ Ibid., 660, 677-8.

¹⁷⁹ Ibid., 659.

¹⁸⁰ Ibid., 657-8, 673-4, 676.

‘wonderfully’, ripened boils and smallpox, extracted their poisonous content and healed them, dispersed goitres and coagulated blood, relieved obstruction of the spleen, and stopped lactation of the breasts. They were apt to soothe ‘great head aches’, stimulate paralysed limbs and cure children’s ‘wet heads’. Tobacco leaf extracts mixed with brandy or lavender essence, and pulverised tobacco sprinkled dry onto their heads, or applied mixed with honey, killed lice and vermin.¹⁸¹ The *Ephemerides* reported that the administration of tobacco enemas had cured epilepsy.¹⁸² Blankaart’s *Physical Dictionary* also commends tobacco enemas as a ‘most effectual Clyster in the Cholick’, the fumes being blown up into the bowels, and (for curing ‘Mother-fits and fainting’) into the womb.¹⁸³

Others warned against tobacco’s detrimental effects on health, particularly in persons of a ‘hot’ and ‘dry’, weak or highly sensitive nature, and prone to consumption, producing precisely those [above] symptoms and ailments other medical authors claimed it eliminated.¹⁸⁴ ‘The losses, in particular to the Germans, in terms of debauchery, money, time and health’, it was claimed, ‘are obvious, and one cannot observe without pain, how some such fire-eaters drink themselves to consumption and death and, at the same time, exhale their souls into the air’.¹⁸⁵ This was all the more likely since tobacco, though only of very recent origin in Germany, was ‘now planted by nearly all the peasants of the Empire in their gardens as an essential piece of husbandry’,¹⁸⁶ which in some areas was scarcely an exaggeration.¹⁸⁷

¹⁸¹ Zedler, *Universal-Lexicon* XXIV(1740) 658-60; 672-3, 677-9.

¹⁸² Ibid., 660; 672.

¹⁸³ Blankaart, *Physical Dictionary*, 1708 edn., 284; According to Rambach, *Versuch* (1801) 430-1, Hamburg rescue kits for reviving victims of near-drowning included a device for giving tobacco enemas.

¹⁸⁴ Zedler, *Universal-Lexicon* XXIV (1740) 673-6.

¹⁸⁵ *Novellen*, Jan. 1692, 87-8.

¹⁸⁶ Ibid., 95.

¹⁸⁷ Steensgaard, ‘Growth and composition’, 142.

Chapter Seven

Blood-letting and Purging - 'Cruel Medical Murder Methods'

i) Blood-Letting

Blood-letting, the mainstay of traditional medicine, and advocated since Hippocratic times for a variety of diseases, was ridiculed by Bontekoe and his allies as contrary to reason in view of William Harvey's new circulation theory, and condemned as a 'deathly weapon' because, Bontekoe argued, those that had been bled several times, particularly during a fever, frequently developed jaundice, the dropsy or consumption, or if not, languished for weeks and months, recovering only slowly. Were those not fine products of the so highly acclaimed blood-letting of which for many, next to purges and enemas, the whole practice consisted? Having carried on in this way for some time, one was at once at wit's end, abandoned the patient and gave up, until he died, or got back on his feet, either with household remedies, friends' advice, or quackery. Could there possibly be a more harmful maxim than one that consisted solely of taking away the body's strength? In Bontekoe's view, there was

nothing more suited to help a body off his feet, and into the grave, no matter how strong he is, than to give an enema or two, then with some lancing of blood vessels to extract several pounds of blood, alongside daily enemas, and purges every second or third day, to dry out all the body fluids and, for all that to succeed even better, to give sufferers nothing for their fevers, pains, or other accidents, yes, to deny them any food except what is poor and emaciating, no fluids, except sour barley water made rotten with sugar.¹

Bontekoe's hard-hitting The Hague lecture on fevers, was a 'warning to all those who love their body and life too much to let themselves be tortured and murdered with blood-letting, purging, cooling drinks and other such murder instruments by the hands of title-

¹ Bontekoe, *Laatste reden van afscheid Over de Koortsen, uytgesproken den 15 July 1681 in 's-Gravenhage. Tot waarschouwing van alle die hun lijf en leven te lief hebben, om sig na de mode en in de form te laten pynigen, martelen en moorden met Aderlaten, Purgeren, Koeldranken en wat meerder is van diergelijke Moordgeweer, In de Handen van de Naam-doctoren* (The Hague, 1681); 63-8; See also J. A. Gehema, *Zwey und zwanzigjährige Bewährte ohnfehlbahre Fieber-Cur, Ohne Aderlassen, purgiren, vomiren, schwitzen, und Juleppen, alle Febres intermittentes [...] zu curiren* (Berlin, 1702; 1753) here 1702 edn., A3.

doctors', and a 'necessary corrosive against their foul and rotten sores' (i.e. practices).² 'I provoke you', he challenged his medical colleagues elsewhere, 'with all your forefathers and the whole Galenist lot, yes, along with the blood-shedding, bloodthirsty gang of Spaniards, Italians and French who rather spill the blood of human beings than water.'³

With his relentless attack on blood-letting, Bontekoe fought against what had for centuries not only been the most important therapeutic tool for any physician but also, next to cupping and purging, a deeply rooted practice, a ritual believed to maintain health which had taken hold of the popular imagination particularly since the fifteenth century when printed blood-letting tables or calendars, advising on which blood vessel to lance at certain times of the year and phases of the moon, and on cupping, purging, and bathing, began to flood the medical market. Supposedly guided by astrological wisdom, they were nothing but an elaborately thought out pseudo-science that dominated health-related thinking.⁴

Of course, there had, over the centuries, been occasional isolated voices of protest. In more recent times, the iatrochemists Paracelsus and Van Helmont had opposed the liberal use of purgatives and blood-lettings, and Dele Bøe Sylvius, owing to his theories on inflammation, had been against blood-letting and considerably limited its use.⁵ Some Dutch physicians advocated the healing of certain conditions without blood-letting, but rejection of all conventional and therapeutic reasons for blood-letting, carried out up to eight or ten times within a few days - to prevent, or stop, inflammation, fermentation in the blood, pleurisy, angina, haemorrhages, to reduce plethora (an overabundance of blood), body heat in fevers, as a remedy against fright, grief, dismay, or a choleric outburst, after a fall, contusion, or to divert the blood-flow etc. – as futile and often harmful by Bontekoe and his allies was unprecedented and naturally met with a great deal of resistance and outrage. Blood-letting was frequently supported with the argument that spontaneous bleedings, such as from the nose, back passage, and during menstruation, did occur and that diseased animals had been observed to bite open one of their blood vessels to rid themselves of excessive blood. The Amsterdam physician Pieter Bernagie publicly defended not only himself against accusations levied at him by

² See title *Laatste reden* note 1 above; On Bontkoe's theory of fevers see the interesting discussion by Geyer-Kordesch, 'Fevers and other fundamentals', esp. 101-8.

³ Bontekoe, *Werken* (1689) I, 192.

⁴ Karl Sudhoff, 'Laßtafelkunst in Drucken des 15. Jahrhunderts', in Karl Sudhoff (ed.), *Archiv für Geschichte der Medizin* (1908) I, 219-88, here 219-21.

Bontekoe, but also the practice of blood-letting, and denied that doctors carrying out venesection were wrong.⁶

Travel accounts of foreign lands also began to influence medical practice. Blankaart and Gehema argued that the Chinese and Japanese completely rejected blood-letting and successfully cured their patients without it.⁷ Blankaart agrees with their rationale that ‘blood-letting for reasons of reducing a great heat in the blood does not temper it any more than the heat of boiling water if part of it is taken from it, in which case other cooling agents must temper and break its force’.⁸ Gehema, in his attack on *Grausame Medicinische Mord-Mittel* (1688), condemning traditional methods of medical therapy like blood-letting, purging, enemas, and the administration of various types of medical potions, also insists on the irrationality of this kind of therapy, as pointless, he suggests, as trying to extinguish a great fire by taking away some of the flames or coals. The reason medical ‘tyrants’ open a blood-vessel, he contends, ‘is in order to cool the burning blood fabricated in their burnt out brains. Such fire is caused by their erroneous and false [notion of] fermentation; but as no such thing can be found, no cooling is required’.⁹ He denounces the ‘dreadful delusion and highly regrettable preoccupation’ with blood fermenting during fevers and the supposed necessity of releasing the ensuing pressure through blood-letting. Explaining the prerequisites for fermentation, and showing their absence in the blood, he negates the necessity for blood-letting.¹⁰ Geuder, in his refutation of Gehema, holds the word fermentation carries different meanings, firstly as a ‘visible motion of many conflicting elements in the blood’, secondly signifying ‘all inner movements, as almost all, especially the liquid particles, have an inherent inner force and constant mobility’.¹¹ Geuder also rejects Gehema’s contention that blood-letting was intended to drive out all the heat, arguing that reduction of body temperature through blood-letting was logical, body heat being

⁵ Haeser, *Geschichte* II, 378.

⁶ Bernagie, *Antwoord* (1682) 6.

⁷ Gehema, *Richtige Wegweiser* (1691) E3; Gehema, *Edler Thee-Tranck* (1686) 20; Blankaart, *Neue Kunst-Kammer* (1690) 31; Blankaart, *Cartesianische Academie* (1690) 408-9; 411.

⁸ Blankaart, *Cartesianische Academie* (1690) 408-9; 411.

⁹ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 10.

¹⁰ *Ibid.*, 6-10; Gehema, *Zwey und zwanzigjährige [...] Fieber-Cur* (1702) A3.

¹¹ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) f 13-15.

nothing but a kind of certain sensitivity arising from the impulse, impact and movement of subtle vapours and *effluvia* from a fiery or hot substance into the nervous parts of our body, the impulse of which gives our reasoning soul cause to conclude that the nerves have been hit by hot and fiery vapours. [...] If now the subtle parts of a seething and very turbulent blood cause a heat by colliding with the nerves and nervous fibres, it seems very reasonable to draw off some of the blood, as then not as many *effluvia* and corpuscles collide with the nerves and nervous parts and therefore heat is somewhat reduced.¹²

Blankaart, for his part, advises that since blood-letting does not cure disease but only weakens its potency and the body with it, this dangerous remedy should not be employed without scruple, as was often the case, but used only in extreme emergency to abate a violent symptom such as a sudden shock, great pain, or a bout of frenzy. As even severe illnesses, like the plague and pestilential fevers, could be treated without blood-letting, the same could be expected of lesser ailments.¹³ Geuder, on the other hand, insists that ‘in many cases experience has proven that those who refuse blood-letting, even if they finally recover from their illness, have nevertheless been afflicted with severe, violent and prolonged symptoms’.¹⁴

Aegidius Daelmans, who also rejected excessive purging and blood-letting as harmful,¹⁵ laid particular store by the blood that a child, growing *in utero*, receives from the mother. This ‘balsamic blood’ had to be preserved as best as possible. Blood-letting diminished that amount and new blood derived from food and drink was not as good as the ‘first blood’,¹⁶ a claim dismissed by Stahl as ‘completely wrong’, the blood of an older person being of the same quality.¹⁷ In Daelmans’ view, illness could most certainly be healed without blood-letting. ‘I could name, with name and surname’, he asserts, ‘all those who died, or nearly died, in Antwerp during the four years I lived there who had blood-letting, cupping, and setting of *Ecchelen* [?] leeches] done to them according to their wishes, and could not name one who died due to the omission of blood-letting because I was summoned to them in time.’¹⁸

Cupping - used to lift dented skulls of babies or a dented spine, to extract stones, a

¹² Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 18-19.

¹³ Blankaart, *Neue Kunst-Kammer* (1690) 32-34; *Cartesianische Academie* (1690) 407-10.

¹⁴ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 52-3.

¹⁵ Daelmans, *Nieuw hervormde geneeskonst* (1687) Preface.

¹⁶ *Ibid.*

¹⁷ Stahl, *Gründliche Abhandlung* (1734) 32.

¹⁸ Daelmans, *Nieuw hervormde geneeskonst* (1687) Preface.

foreign body from the ear, deep pus from wounds, or treat a dog or snake bite, and also considered beneficial for colic, wind, dysentery, colds, throat swellings, tooth and headaches, gout pains, emaciated limbs, or to stop women menstruating (by applying the cup to the breast), and the careless and ill-considered way in which it was employed – was equally condemned and banished from ‘rational practice’. Being in a way equivalent to ‘small blood-lettings’, there was, in Gehema’s opinion, ‘nothing more foolish than saying that by cupping only impure blood, or corrupted fluid [...], is extracted’.¹⁹

Blankaart admonished barber-surgeons and those pretending to be ‘magicians’ and ‘soothsayers’ to draw in their flags, ‘particularly as I and my followers will oppose them as much as we can [...] and put our foot on the necks of these various blood-spillers, they may scream and defy us as much as they want’.²⁰ According to Blankaart, surgeons were ‘generally too daring’ and when ordered to let six ounces of blood at times let two pounds instead. Paul Barbette therefore deserved praise for inventing a tin basin with markings.²¹ But the prevalence of blood-letting and cupping was, Blankaart claims, already markedly receding because many were becoming convinced of the arguments against it and ‘even those belonging to the old sects gradually begin to follow us and ration its use’.²² Seeing that in ‘more than a hundred cases people got much worse after blood-letting’, he advised many families against it who ‘used to have it done several times per year, and they are now in much better health than before’.²³

There are indications that this change in attitude towards blood-letting (and purging) may have happened to a greater extent in the Netherlands than elsewhere.²⁴ In England, for example, the senior English physician Walter Harris, writing in 1699, commented on the peculiar practice of the Dutch to

bleed so sparingly and seldom as they do. For when they do think fit to bleed, they will seldom or never take away more blood from a man or woman, than we do from an infant of a year old. How they came to fall into such an Extremity of Bleeding little, I cannot well comprehend, considering how profusely the French, and the more southern nations, do use venesection upon most occasions. Nor are the Dutch the most abstemious from Wine and Brandy, which will be apt to heat and inflame the blood, and consequently upon excess sometimes cause diseases that properly require large bleedings; neither am I ignorant that their physicians are very learned men,

¹⁹ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 33

²⁰ Blankaart, *Neue Kunst-Kammer* (1690) 43-4.

²¹ *Ibid.*, 37.

²² *Ibid.*, 31, 44.

²³ Blankaart, *Von Würckungen* (1690) 279-83.

²⁴ See, for example, Huisman, *Stadsbelang*, 196.

and must read those excellent books of Galen concerning venesection.²⁵

In Italy, however, despite the persistence of traditional medical methods, Cartesian and Sylvian influences penetrated strongly from the 1660s, particularly in Naples. The highly regarded priest and professor of medicine Carolus Musitanus (1635-1714), for example, combining both roles by special papal dispensation, favoured the iatrochemical approach, condemned blood-letting, the use of leeches, suppositories and clysters, and looked upon those practising blood-letting as murderers.²⁶ Among those in Italy who opposed blood-letting, mostly under the influence of Sylvius, were Lukas Tozzi (1640-1717) professor at Naples and papal physician in ordinary, Pompejus Sacchi, Lukas Antonio Portius, Allizanus and Dominico la Scale.²⁷

In Spain, where medical theory and practice were dominated by the books of Hippocrates, Galen, and Avicenna, the Valencian Cartesian physician and professor of medicine Juan de Cabriada (c. 1665-c. 1715) was the first to introduce the ‘new philosophy’ and science in the 1680s, and to publicly attack Galenist medicine in his *Carta Philosophica Medica Chymica* (1686), starting a conflict between *Galenistas* and *Modernos* which lasted for decades.²⁸ Surprisingly, the book met with the approval of the Catholic Church. The *Aprobación* by Don Antonio de Ron comments on the growing divergence of opinion over blood-letting and purging, the

two most frequent and capital remedies that they apply for almost all indispositions [...] as the most easy to put into practice, although not without equal contingency of risk as of benefit to the patient. This method has long been in use without sufficient reflection about it, in a subject that amounts to nothing less than life itself.²⁹

Cabriada stresses the necessity of ‘philosophical liberty’ and of rejecting all those doctrines and assumptions shown to be false by experience. He emphasises the importance of anatomical research in the light of recent discoveries, such as Harvey’s findings concerning the circulation of the blood, which were driving the changes in

²⁵ Cited in Jonathan I. Israel, ‘Dutch influence on urban planning, health care and poor relief: the North Sea and Baltic regions of Europe 1567-1720’, in Ole Peter Grell and Andrew Cunningham (eds.), *Health Care and Poor Relief in Protestant Europe 1500-1700* (1997) 66-83, here 76.

²⁶ Stolle, *Anleitung*, 304-7; Christian Gottlieb Jöcher, *Allgemeines Gelehrten Lexicon* (1751) 777-8.

²⁷ Bauer, *Geschichte*, 160; Baas, *Outlines*, 496.

²⁸ Israel, ‘Counter-Reformation’, 41, 44.

²⁹ Juan de Cabriada, *Carta Philosophica Medica Chymica*, (n. p. 1686) 3.

medical ideas. As a result of foreign influences from the Netherlands, as well as ‘Germany, France and other provinces’, the doctrines of Galen were in retreat.³⁰ Cabriada declares ‘reason and experience’, and not ‘authority’, as the ‘keys to scientific and medical progress’.³¹ His discussion of Dele Bœe Sylvius, calling him ‘one of the most praised of modern authors’, reflects the fact that his medical thinking was especially influenced by Sylvius’s iatrochemical views.³² He regrets that there had not been any advance whatsoever in Spanish medicine for forty years (i.e. since Descartes’ works started to be published), when in that time it had been so embellished with ‘discoveries physical, anatomical and chemical, as new as they are true, made by the geniuses of the North and Italy’.³³ He saw it as ‘sad and shameful’ that in Spain, ‘as if we were [American] *Indios*, we have to be the last to learn the new and published discoveries which are already spread across the whole of Europe’.³⁴ Cabriada particularly attacks blood-letting as being employed much too freely when all new findings and the whole logic of it contradicted its use.³⁵

Cabriada’s pessimism reflects the prolonged shortcomings in scientific development in Spain, and its isolation from the European scholarly community, to a considerable extent owing to King Philip II’s decree, in 1559, that ‘none of his subjects, of whatever state, condition or quality may leave this kingdom to study, or teach, or learn, or be, or direct in universities, institutes, or colleges beyond the frontiers of this kingdom’.³⁶ Cabriada and like-minded physicians were attacked by *Galenistas* as ‘seducers’ undermining ‘scholastic truth and threatening faith, as well as *medicina galenica*, the medicine allegedly “favoured by the entire Catholic Church”’, but through their initiative, in the face of ‘bitter opposition’, the ‘new philosophy’ gained a firm foothold, the first academy of medicine and science being established at Seville in 1700.³⁷

In France, as elsewhere throughout the sixteenth and seventeenth centuries, Brockliss and Jones stress, blood-letting remained the chief remedy for treating diseases.³⁸ French physicians, treating fevers, were known to let blood ‘generously’ up to twelve times

³⁰ Cabriada, *Carta Philosophica* (1686) 1-5.

³¹ Israel, *Radical Enlightenment*, 530.

³² Cabriada, *Carta Philosophica* (1686) 20, 22-3, 27-8, 108-10.

³³ *Ibid.* 27-8.

³⁴ *Ibid.*, 230-31.

³⁵ *Ibid.*, 27; 63, 91, 125-8.

³⁶ Enrique Perdiguero, ‘The popularization of medicine during the Spanish Enlightenment’ in Porter, *Popularization*, 160-93, here 160.

³⁷ Israel, *Radical Enlightenment*, 530.

³⁸ Brockliss and Jones, *Medical World*, 155.

within four days.³⁹ In the eighteenth century, phlebotomy remained a regular and crucial procedure, but it remains unclear from their discussion how far the sudden shift to iatromechanistic doctrines in the 1690s reduced or altered the use of this remedy.⁴⁰ In any case, in the Netherlands and Germany, there continued to be a perception that French physicians were employing this method much more extensively than the Dutch or Germans.

In northern Germany, there are strong indications that due to the scientific and philosophical ideas based on Cartesianism and Sylvian iatrochemical theories and practices, emanating chiefly from the Netherlands and propagated internationally, changes in attitude to blood-letting and purging were taking place in this period which made it possible to curb their popular application to an appreciable extent. In 1723, Albrecht von Haller noted during his stay in Tübingen that illnesses were treated after the methods of the Leipzig professor Michael Ettmüller and ‘blood-letting was used sparingly’.⁴¹ Ettmüller, though not in favour of blood-letting in great weakness, the old, or very young, and not believing in *revulsio* or *derivatio* procedures, does advise it ‘from veins or arteries’, with leeches, or through cupping, to assist, *inter alia*, the free flow of the blood circulation, retention of urine, a heavy birth, reduce symptoms after a fall, or prevent certain diseases from erupting.⁴²

Already in 1689, Gehema’s fierce condemnation of blood-letting was indignantly refuted by Geuder as exaggerated and outdated, since, or so he insists, ‘it is obvious to everyone that the gross abuses he complains of have noticeably decreased and from day to day diminish further’.⁴³ Compared with the French medical profession who bled profusely and indiscriminately,⁴⁴ most German doctors, in Geuder’s view, did not deserve this criticism and, in France too, many were ‘beginning to see the light, the medical faculty at Montpellier in particular turning to other methods, especially those described in German and Dutch medical writings’.⁴⁵ Gehema’s riposte, *Abgenöthigte Antwort oder der erste Stein aus D. J. A. à Gehema wohlzugerichten Schleuder mit*

³⁹ Banga, *Geschiedenis*, 421.

⁴⁰ Brockliss and Jones, *Medical World*, 568-72.

⁴¹ Hintzsche, *Albrecht Hallers Tagebücher*, 15.

⁴² Michael Ettmüller, *Kurtzer Begriff der ganzen Arzney-Kunst, Aus seinen medicinischen Schrifften zusammen gezogen* [...] (Leipzig, 1717), 74-5, 758-9.

⁴³ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) ‘Preface’, A; Munt, ‘Impact’, 227.

⁴⁴ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 36; A French lady, for example, told Geuder that within eight months, during and after her pregnancy, she was bled 48 times.

⁴⁵ *Ibid.*, 33-35.

unerschrockenem Muthe geworffen wider dem Stuttgartischen Goliath, D. Melch. Frid. Geuder, was published in Frankfurt the same year (1689).⁴⁶

In defence of Gehema, Conrad Horlacher, city physician in Ulm from 1684-91, published his views on the ‘highly deleterious effects of blood-letting and purging’⁴⁷ which was promptly contested under the pseudonym Janus Modestinus Alethophilus in defence of Geuder.⁴⁸ Horlacher dismisses Geuder’s attack on Gehema’s views as largely ineffective because, in principle, Geuder appears to be more against blood-letting than for it.⁴⁹ Horlacher points out that daily experience repeatedly showed the ill-effects of blood-letting, such as fainting, weakness and pallor, as well as an initial natural horror and aversion to measures so grossly contrary to nature.⁵⁰ Robbing the body of the life spirits was downright ‘unchristian’ for, according to Moses, the source of life lay in the blood.⁵¹ Sharp and repeated purging, causing bad stomach cramps and subsequent constipation, was equally detrimental to health and thus illogical. After Hippocrates, the body was its own best healer and effectively rid itself of harmful or surplus substances.⁵² In Horlacher’s view, the causes of illness were in most cases of an ‘invisible, subtle and spiritual nature’ and could therefore not be healed through the evacuation of visible matter.⁵³

Refuting Horlacher, ‘Alethophilus’ reminds the reader that disagreements about blood-letting and purging had gone on since the times of Hippocrates and Galen. That Bontekoe’s voice of dissent was one of the strongest is obvious from the author’s reference to

the quarrels the learned Cornelis Bontekoe and his followers started a short time ago with their total rejection of certain frequently employed methods [...] and the divisions this caused among scholars since they mostly fail to take the middle way, going to extremes, so that one side bans the old [medicine], and particularly

⁴⁶ Ersch and Gruber, *Allgemeine Encyclopaedie*, part 1, LXV, 228.

⁴⁷ Conrad Horlacher, *Die höchstschädliche Würckung Des Aderlassens und Purgirens, Mit zehen Beweiß-Gründen und Beantwortung der vornehmsten Einwendungen auch Kürzlicher Betrachtung der von D. Geudern dem D. Gehema entgegen gesetzten Apologie (in welcher die Purgir-Mittel und das Aderlassen vergebens gerettet* (Frankfurt, Leipzig [Ulm]: Georg Wilhelm Kühn, 1691).

⁴⁸ Janus Modestinus Alethophilus [pseud.], *Unvorgreiffliches Bedencken, über D. Conrad Horlachs Tractätlein, von der schädlichen Würckung des Aderlassens und Purgirens, worinn seine zehen Beweiß-Gründe wiederleget, und D. Geuders Lebens-Mittel gerettet werden* (Frankfurt, 1691).

⁴⁹ Horlacher, *Höchstschädliche Würckung* (1691) 33-7.

⁵⁰ *Ibid.*, 2-6.

⁵¹ *Ibid.*, 7, 21.

⁵² *Ibid.*, 9-15.

⁵³ *Ibid.*, 19.

the *methodum medendi*, altogether, and the other merely maintains all the old [methods] and does not want to know about any new ones. In particular, there is always disagreement about purging and blood-letting, held in high esteem beyond measure by the Galenists and recommended in almost all illnesses while being totally rejected by Van`Helmont, and recently by Bontekoe and his followers, yes even exclaimed to be murder methods.⁵⁴

‘Alethophilus’ agrees with others who advocate a carefully selected middle path in theory and practice by trying to eradicate the abuses in medicine without altogether abolishing the old structures. While there were now ‘more *medici eclecticici* than ever before’, he observes, neither was there any lack of ‘sectarians who pay more heed to the opinions of this or that author than unadulterated truth and experience’. Helmont, Bontekoe and his followers in particular, had, in opposition to all sensible objections against their total rejection of blood-letting and purging, published some rather ‘caustic writings in order to turn people against their use’. Horlacher, ‘a declared enemy of all purging and blood-letting’, is counted among them.⁵⁵

Horlacher’s rhetorical arguments, for example condemning blood-letting and purging during pregnancy as an offence against the fifth commandment [Thou shalt not kill] by precipitating abortions and premature births, do not, in Alethophilus’s opinion, hold up against everyday experience. Waldschmidt and others had, after all, claimed to have successfully prevented miscarriages many times through blood-letting, and Johann Peter Albrecht had ‘sufficiently proven in the *Ephemerides Naturae Curiosae* how difficult it is, directly or indirectly, to abort a child, not only with blood-letting and purging but other methods as well’.⁵⁶ Granted that blood-letting and purging could cause ‘all sorts of ill-effects’, should one ban such methods altogether and ‘throw out the baby with the bathwater’?⁵⁷

Yet, even if some rejected blood-letting and purging and ‘other such medical tortures’, seeing that ‘Bontekoe and other distinguished physicians are in agreement about this’,⁵⁸ the lay-public would not, in any case, easily relinquish traditional notions concerning the benefits of blood-letting, the choice of specific veins, and the *revulsio-derivatio* procedure for certain complaints. Geuder who, despite his protests, appears to

⁵⁴ Alethophilus, *Unvorgreiffliches Bedencken* (1691) 2-3.

⁵⁵ *Ibid.*, 3-4.

⁵⁶ *Ibid.*, 10-15.

⁵⁷ *Ibid.*, 16.

⁵⁸ See above, ch.VI, 198.

belong to the converted, wishing that the ‘deeply rooted erroneous and contrary opinion in favour of blood-letting among *medici* and in the minds of so many people would be totally abandoned’,⁵⁹ admits that although the ‘now rightly discovered and well thought out circulation of the blood following mechanistic principles makes nonsense of the so highly acclaimed *derivationes* and *revulsiones* of the ancients’:

A medicus at the bedside connives with heavily prejudiced colleagues, poorly informed bystanders, and especially the patient, for the sake of not displeasing them, and agrees to a venesection, an imagined *revulsio* or *derivatio*, rather than going into lengthy explanations [...], for untimely controversy only gives rise to bitterness, mistrust, agitation and anxiety.⁶⁰

Geuder does not believe in cupping either but would not condemn it as people continued to believe in its beneficial effects.⁶¹ Bontekoe’s and Gehema’s considerable negative impact on the practice of blood-letting is also evident from a 1718 publication by the well-known German surgeon Heinrich Walther who claimed that

a sizeable number of books were published some years ago in rapid succession by just two or three learned persons, based rather on ill-considered notions and personal opinion than definite experience, in which the utmost efforts were made, indeed with almost excessive fervour, to overthrow the chief foundations [of medicine] to erect, with contempt and derision for the old masters, new edifices, to which end much timber was felled and with such hard blows that it echoed through the whole world, so that even the most skilled physicians and surgeons who had with all confidence practised happily for years, were decried by these new ‘experts’ as gruesome murderers and blood-shedders.⁶²

Walther had hoped that from their works, or so-called *Kunstgebäuden*, ‘built atop the ruins of the despised ancients as rapidly and fast as a cockerel runs over glowing coals’, a ‘reasonable way could be found towards useful medicines and a far better method for restoring the sick than was formerly known’, but his hopes had been dashed when so many of their propositions, to his mind, went against the preservation of human well-being and proven experience. Especially worrying, he thought, was that those still

⁵⁹ Geuder, *Medizinische Lebens-Mittel* (1980[1689]) 56.

⁶⁰ Ibid., 48; Blankaart, in *Cartesianische Academie* (1690) 410, also ‘confesses’ to blood-letting at the demands of the ‘common man greatly biased in its favour, or of a *Practico* with shallow learning who stubbornly insists on the old tinkering’.; See also Blankaart, *Von Würckungen* (1690) 281-2.

⁶¹ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 56-60.

inexperienced in medical practice, seeing the zeal of such new mentors and their high contempt towards older medical scholars, mostly consulted only authors offering much new material but little about unexpected cases and their treatment. In medicine, venturing out on a new undeveloped path in contempt of the well-prepared road was, in his view, extremely dangerous, particularly when, in difficult cases, relying on one's own reason and judgement.⁶³

Walther claims to have frequently observed the 'deplorable practice' of those 'new reformers of medicine' in his own home town. Basing their practices on the unfounded teachings of Bontekoe and their own discretion, they refused to resort to blood-letting in malignant and intermittent fevers, so necessary to stop 'ebullition', and even in the most severe cases of pneumonia and pleurisy spurned the use of any decongestants, using 'blood-inflaming medicines' such as laudanum (an opium mixture) instead, and emetics in large quantities, thus causing many to perish. Seeing this, many young physicians had reverted to former medical practices, but others 'continued to give offence by rebelling with all their might against truth [...] to the great detriment of their patients'.⁶⁴ Like 'Alethophilus', Walther indicates that Bontekoe's teachings were divisive, taken to extremes by some and considered highly damaging by others. Lorenz Heister, equally, did not agree with 'Erasistratus, Paracelsus, Helmontius, Portius, Bontekoe, Gehema, and others' who had denounced those advising blood-letting as 'executioners'.⁶⁵

Johann Caspar Reiß, at Augsburg, attributes the unwillingness of surgeons to accept Bontekoe's demands to ban blood-letting and cupping from general practice to their not wishing to be deprived of a large part of their income. In Reiß's opinion, it was never Bontekoe's intention to stop blood-letting in Germany, France, Italy and Spain, located further south, nor altogether for his own countrymen in their colder climate, but rather its very great abuse. According to Reiß, in the moderate climate of 'upper' Germany, there was no great abuse in blood-letting and cupping, but 'everyone has to admit that it has been greater before'. Many old authors had also sharply condemned the misuse in wasting blood, and, more recently, Friedrich Hoffmann, in defence of blood-letting, had warned against its abuse and agreed that if people lived as they should, blood-letting would be wholly unnecessary. Thus Bontekoe had to be excused and all his ideas could

⁶² Walther, *Glücklicher Feldscherer* (1718) Preface, 2.

⁶³ *Ibid.*, 3-4.

⁶⁴ *Ibid.*, 4.

⁶⁵ Heister, *Chirurgie* (1724) 357.

be upheld through proper interpretation and defended, as Reiß did in his lectures to student surgeons.⁶⁶

Hoffmann, in his well-considered ‘investigation of acid and mucus’ as the alleged source of all diseases and ailments of the human body, had contested Bontekoe’s and Blankaart’s rejection of blood-letting as a ‘highly harmful and even deadly remedy’ and their condemnation of even those who used it only occasionally as ‘murderers’, arguing that ‘no-one who combines daily experience with healthy reasoning can deny that it is a very useful and highly necessary tool for recovery from many illnesses’.⁶⁷ Hoffmann, having adopted, like his teacher Wedel, the theory of plethora,⁶⁸ defends blood-letting as a ‘noble and heroic method’ and ‘holy anchor’ in a variety of acute conditions, such as a severe pain, a fit of mad rage, or a cerebral stroke, for treating melancholia, plethora, menstrual obstruction, or preventing a miscarriage, for it ‘not only averts the influx of moistures, and tempers inflammation but also calms the frenzied life spirits’. He advises against blood-letting in prolonged ‘cold’ illnesses or other weaknesses and concedes:

Truly, to be honest, there is well nigh no remedy whose abuse is so common with most practitioners as this; that is why this noble method has come into such bad disrepute. Indeed, blood-letting, where extensively applied without pressing exigency, in many cases could easily be abandoned.⁶⁹

Admittedly, a good diet and medicines like saltpetre, opium, and diaphoretics could also ‘calm a turbulence of the blood and reduce its overabundance’, but, Hoffmann argues, ‘who can just hold out in an unexpected and sudden attack without increasing danger?’ Before all other things, blood-letting was therefore the most reliable and most remedial procedure.⁷⁰

Stahl, in his *Gründliche Abhandlung des Aderlassens* (German transl.:1719), specifically turns against ‘those who in these times wanted to make the use of blood-letting wholly suspect and abolish it’ and had ‘prejudiced many minds against it’ by declaring it a ‘highly harmful procedure which could never be used without causing great damage to health, and quite shamelessly calling it a murder method and deadly

⁶⁶ Bontekoe, *Grund-Sätze der Medicin und Chirurgie* (1721) Preface.

⁶⁷ Hoffmann, *Eigentliche Untersuchung* (1696) 89-92.

⁶⁸ Bauer, *Geschichte*, 161, 170.

⁶⁹ Hoffmann, *Eigentliche Untersuchung* (1696) 92-4.

⁷⁰ *Ibid.*, 97-8.

way of curing'.⁷¹ Experience had shown the 'damage' inflicted by them as patients were, in any case, 'loath to be bled, even in the highest need, and induced by such empty chatter not only to distrust the remedy but even the *Medico* himself'.⁷² Stahl concludes that 'those who derive all illness solely from the various formations of particles, the acidity of the body fluids and a mechanistic necessity altogether, must necessarily dismiss all views of the old [medicine] and destroy its whole way of describing illness, especially its development, duration, characteristics, and treatment methods'.⁷³ However, he insists, 'the so highly praised universal remedies, volatile salts and suchlike of these newer [doctors] do certainly not have such an effect that, on their account, one should, or must, advise against blood-letting'.⁷⁴ Stahl firmly distances himself from their iatrochemical and Cartesian mechanical body physiology by rejecting the notion of the body as an 'empty machine' whose life depends on exterior principles, such as 'thick or thin air', or that the 'biting sharpness of acid particles of whatever taste, shape or size could by their own power cause movements in the tendons and arteries, or tensions and pain'. The pervading influence of the chemical and mechanical philosophies in the early decades of the eighteenth century is evident from his remark, 'we do not derive most illnesses from acidity, or the sharpened stinging particles [Stacheln] of the fluids, as one is now almost everywhere accustomed to do'.⁷⁵

Anticipating counter-arguments from the informed reader, Stahl defends blood-letting not to drain the 'bad blood, as the common man says, for I know that you would rebut me by referring to the equal distribution and circulation of the blood'. He also rejects the 'common and usual reproach that hereby the thinnest and most subtle blood is extracted'.⁷⁶ His main reason for advocating blood-letting is to assist nature in the primary task of keeping the blood in 'sufficient fluidity' and ensuring its unhindered circulation and continual filtering function through the porous [löcherige] parts of the body. At great length, Stahl explains that the blood is very prone to becoming 'thick and putrid'. According to Roger French,

⁷¹ Stahl, *Gründliche Abhandlung* (1734) Preface A5, 10-11; Georg Ernst Stahl, *Abhandlung von der Goldenen Ader, worinnen Viele heilsame Wahrheiten entdeckt, viele grobe Irrthümer widerleget [...]* (Leipzig, 1729) 358.

⁷² Stahl, *Gründliche Abhandlung* (1734) A5.

⁷³ *Ibid.*, A4-5.

⁷⁴ *Ibid.*, 12.

⁷⁵ *Ibid.*, 14; Stahl, *Abhandlung von der Goldenen Ader* (1729) 346-7.

⁷⁶ Stahl, *Gründliche Abhandlung* (1734) 15.

For Stahl the primary and irreducibly vital action of the soul in the body was the generation of blood. Blood and the other material components of the body were, above all, highly putrescible, and the outstanding paradox of physiology was how the soul preserved them from decay during the lifetime of the individual. No mere mechanism could do this, but only imposed and salutary motion from an incorporeal source and with beneficial purposes. Stahl's pathology centres on the tendency of blood to become denatured in the body.⁷⁷

Stahl (also influenced, it appears, by Wedel's plethora theory) reasons that a plethora, the 'mother of many diseases', created by good living and little physical exercise, would give rise to a sluggish circulation, blockage of the body fluids, inflammations and fevers, and subsequently cause the 'greatest danger and destruction', as its 'putrefying fermentation' could 'dissolve and destroy it'.⁷⁸ As the body, by nature, seeks to emit excess fluid and 'consume and reduce the surplus blood through an increased and forward-pressing movement',⁷⁹ explained also as a 'motum tonicum', natural bleedings, or ventilations – from the nose, back passage, and during menstruation – are, in Stahl's opinion, designed to maintain health. If not taking place in a natural way, the body is, Stahl insists, likely to dispose of plethora through the lungs, stomach, or kidneys, and, at worst, a heavy haemorrhage.⁸⁰

Stahl does not directly invoke the soul as the body's regulating agent but speaks of a 'God-given order for the maintenance of the body fluids to prevent putrefaction of the blood', and of a necessary 'inner principle initiating effects and regulating movements, yes, many times in such a way that our reason recognizes the useful purpose and thus also its intention'.⁸¹ For the prevention and cure of plethora and its many other possible ill-effects, including headaches, ear-, nose- and throat complaints, colic, tensions, swellings, palpitations, chest tightness, as well as consumption, Stahl considers 'artificial ventilation' highly essential. Admittedly, physical work and eating less would also improve the body's proper functioning, but as city dwellers in particular tended to lead a more sedentary life than country folk, blood-letting was the 'quickest, safest and surest way' to ensure a 'direct, clear ventilation of the blood'.⁸² As a prophylactic measure, Stahl advises spring and autumn blood-lettings, deeming it 'no superstition' to take note

⁷⁷ French, 'Sickness', 92.

⁷⁸ Stahl, *Gründliche Abhandlung* (1734) 16-27.

⁷⁹ *Ibid.*, 28.

⁸⁰ *Ibid.*, 40-58; Stahl, *Abhandlung von der Goldenen Ader* (1729) 6, 299-305, 325, 335-46.

⁸¹ *Ibid.*, 287-8, 297; Stahl, *Gründliche Abhandlung* (1734) 15.

⁸² *Ibid.*, 56-74; Stahl, *Abhandlung von der Goldenen Ader* (1729) 189-94, 222, 261-71.

of the changes of the moon, a waning moon being most suitable, as nature was at that time most inclined to reduce moisture.⁸³

One might suppose that Stahl is addressing a broad audience when explaining the benefits of timely blood-letting repeatedly and at great length, since at one point he expresses confidence that the whole treatise could be ‘readily grasped without great difficulty’.⁸⁴ On the other hand, he seems to have a professional audience in mind when advising readers to consult the ancient and modern advocates of blood-letting, citing Galen, Forestus, Botallus, Sydenham, Riverius, Rulandus, Rolfincius, and Ettmüller, authors mostly available in Latin.⁸⁵ The regular therapeutic and prophylactic blood-lettings resulting from Stahl’s notion of plethora as the cause of many diseases reportedly led to the ‘abuse of evacuating methods’ by Stahl and many of his followers, a defect even criticized by one of his closest disciples, Johann Samuel Carl.⁸⁶ These traditional and conservative features of Stahl’s therapeutics are perhaps seriously understated in recent efforts to highlight Stahl’s medical reform efforts as an *Instauratio*.⁸⁷

That the controversies over blood-letting continued far into the eighteenth century is, among other publications, well documented in the medical diary of Albrecht von Haller, in whose numerous book reviews, over nearly thirty years, the issue of blood-letting, its usage and abuse, is frequently discussed. Its remedial effect, especially in the case of fevers, continues to be defended by Haller against authors who suggest otherwise.⁸⁸ Johann Jacob Schlierbach, for example, whose careful reasoning (after twenty-four years of medical practice) about blood-letting in the case of fevers and contagious diseases points to a safe middle path between the ‘substantial body of those who make every effort to denounce blood-letting as a murder method’ and others who ‘praise it as the first and best remedy and use it indiscriminately’, concluding that ‘those who despise blood-letting are the more in accordance with nature’.⁸⁹ Haller regards Schlierbach as having too much respect for the ‘workings of nature’ and being too ‘timid’ about blood-letting.⁹⁰

⁸³ Stahl, *Abhandlung von der Goldenen Ader* (1729) 87; According to Zedler, *Universal Lexicon* I (1732) 493, ‘Stahl’s principiis’ to let blood in the *Æquinotio*, when day and night are the same, was the accepted standard.

⁸⁴ Stahl, *Gründliche Abhandlung* (1734) 120.

⁸⁵ *Ibid.*, 87.

⁸⁶ *ADB* III (1876) 782-3.

⁸⁷ See Geyer-Kordesch, *Pietismus*, and Oliver Hochadel’s review in *Sehepunkte – Rezensionenjournal für die Geschichtswissenschaften* II, 5 (2002) 1-3 @ www.sehepunkte.historicum.net/2002/05/2925.html

⁸⁸ Römer and Usteri, *Herrn von Hallers Tagebuch* I, entry 1748: 488-91, entries 1749: 673-4, 708.

Schlierbach's treatise well illustrates Bontekoe's and Gehema's continuing impact on the debate and use of blood-letting in mid-eighteenth century Germany. While no longer mentioned by name, their echo still resounds. By this time, the most influential medical authorities in Germany, namely Boerhaave, Hoffmann, Stahl, and Haller, were generally in favour of blood-letting and other evacuating methods. 'These days', the Breslau physician Balthasar Ludwig Tralles (1708-97) observed in 1736, 'plethora is considered by very many medical scholars as almost the sole cause of all illness; they can therefore not possibly be enemies of blood-letting which reduces it in the surest and quickest way'. Tralles, renowned for his successful cures,⁹¹ expressed surprise that some doctors, despite these views, did not allow blood-letting to alleviate plethora and the 'unnatural drive [Trieb] of the blood' and were uncertain about its benefits or declared it harmful, especially in 'hot fevers'.⁹²

According to Tralles, medical opinion had changed compared to 'fifty years ago when everything in medicine looked sour and slimy and all illness was attributed to these two causes, above all by Dutch physicians who had many followers in various places, and blood-letting had been out of favour almost everywhere'. These views, he claimed, had 'gone to sleep', and blood-letting had, due to the plethora theory and the necessity to ensure an unhindered circulation of the blood, regained a 'very different and much nobler status', but, to his regret, continuous 'squabbles and quarrels' about blood-letting, especially during fevers, or in the case of smallpox, still persisted.⁹³ As extreme examples of opposing views about blood-letting he mentions the Parisian physician 'Botallus', in favour of frequent blood-letting who, 'despite stirring up controversies in the whole medical faculty, managed to keep frequent blood-letting common [practice] in France to this day', and the 'well-known' Gehema who, in his book on 'cruel murder methods', and his so-called *Wegweiser zur beständigen Gesundheit und einem langen Leben* (1691) had advised against blood-letting and cupping at all times, even stating in the latter, 'If a *Medicus*, after the usual carelessness, wants to cure you with blood-letting, purging and enemas, rather commend yourself to

⁸⁹ Johann Jacob Schlierbach, *Practischer Versuch und Vorstellung vom Nutzen und Schaden des Aderlassens* (Giessen, 1747) Preface.

⁹⁰ Römer and Uster, *Herrn von Hallers Tagebuch* I, entry: 1748: 474-5.

⁹¹ See *HBL* 2nd V, 623; *ADB* XXXVIII, 489-94.

⁹² Balthasar Ludwig Tralles, *Das Aderlassen Als ein Offtmals unentbehrliches Hülffs-Mittel zu Einer glücklichen Blatter-Cur* (Breslau, 1736) 16.

⁹³ *Ibid.*, 15-16.

the hand of the Lord than to men.’⁹⁴ One could surmise that many among the German lay-public were taking Gehema’s advice literally, since Tralles, being in favour of blood-letting in smallpox (counted among the ‘hot’ fevers), laments that most doctors are prevented from applying this measure ‘by the noisy clamour of the common people who believe that if just a single drop of blood has been drawn during this disease, the patient will be placed in danger of body and life’.⁹⁵

Others remained unconvinced by arguments against blood-letting and continued to adhere to deeply rooted traditional notions about its benefits,⁹⁶ but it is evident from the prevailing literature that Bontekoe and his allies had a considerable impact on both views about and the practice of blood-letting. Waldschmidt and Dolaeus, even if not agreeing with Bontekoe in all respects, were clearly influenced by him, not only in his praise of tea but also with regard to their strong reservations about blood-letting and purging.⁹⁷

Ironically, in Blankaart’s ever expanding and newly edited (1788) German version of his *Lexicon medicum*, blood-letting continued to be commended as the ‘most excellent aid to render the body limp’ and an ‘indispensable, very effective remedy for many illnesses’, reporting ‘outstanding results’ for reducing an overabundance of blood, and thus pressure, in the arteries, veins, and on the heart, as well as diminishing friction between solid and fluid parts, for tightening overly expanded blood vessels, thinning the blood, freeing the circulation and encouraging eliminations. Blood-letting also facilitated diverting blood to other parts which ‘cooled’ it, and was indicated at signs of considerable inflammation or much increased heat. While producing a ‘most immediately evident relief’, if employed at ill-advised times, such as in old age, chronic illness or great weakness, the author warns, it ‘must be deleterious, owing to the manifold changes it causes in the body’, concluding, ‘it follows therefrom how injurious are the prejudiced opinions of certain physicians who are for or against this tool, in that some want to ban it completely and others use it indiscriminately’.⁹⁸

In the medical profession, changes in attitude towards the heavily prejudiced subjects of blood-letting and purging certainly had taken place by the second half of

⁹⁴ Tralles, *Aderlassen* (1736) 14-15; Gehema, *Richtige Wegweiser* (1691) F2.

⁹⁵ Tralles, *Aderlassen* (1736) 30.

⁹⁶ Zedler, *Universal Lexicon* I (1732) 493-4.

⁹⁷ See also the review of Dolaeus’s *Encyclopaedia* in [Le Clerc] *Bibliothèque Universelle* II (1686) 141-54.

⁹⁸ Blankaart, *Arzneiwissenschaftliches Wörterbuch* II, 284-6.

the eighteenth century. In the widely read compendium-style ‘catechisms of health’, published since the 1760s and directed at a lay readership, especially in rural areas, to impart rational rules for healthy living and appropriate conduct in illness, criticism of regular seasonal blood-letting and purging as a prophylactic measure against ‘plethora’ had become ‘almost stereotype’.⁹⁹ Their medical authors sought to modify deeply rooted notions and habits among the populace with explanations as to the ‘uselessness, if not harmfulness of such practices’.¹⁰⁰ It is senseless, the reader is told, to let blood from particular veins in certain conditions, blood being of the same quality in all vessels; blood-letting cannot improve its composition just as bad beer in a vat does not improve by draining part of it. Purging was equally useless for expelling corrupted body fluids as these resulted from diseased organs.¹⁰¹ Changes in the practice of regular blood-lettings had certainly come about by the early nineteenth century, for a German *Hauslexikon*, or ‘complete handbook of practical knowledge of life for all social classes’ (1834), concedes ‘we are past those times when regular blood-lettings, for example in spring, or mid-pregnancy, was deemed appropriate’, asserting, however, that ‘many are still not sufficiently acquainted with the drawbacks of untimely blood-letting’.¹⁰²

After 1830, the practice of blood-letting in the western world generally declined but without any particular ‘crisis of medical opinion’, or development, accounting for the change.¹⁰³ The negative symptoms recorded after a blood-letting of twelve to twenty ounces, in 1840, included an ‘icy feeling of weakness, then a rise or drop in pulse rate, slowed respiration, a cold sweat, dilated pupils, also vomiting, with or without spontaneous evacuation and, finally, loss of consciousness’, and the subsequent long-term consequences of frequent bleedings - ‘general weakness, susceptibility to illness, infirmity, dropsy, anaemia, gross obesity’¹⁰⁴ - confirm the ill-effects many people must have suffered from the frequent use that was made of this therapeutic tool and seemingly justifies the campaign against excessive blood-letting by Bontekoe and his followers.

More recent scientific evidence of the effects of moderate blood-letting on patients

⁹⁹ Sahmland, ‘Gesundheitskatechismus’, 57-73.

¹⁰⁰ Ibid., 65.

¹⁰¹ Ibid., 66.

¹⁰² Gustav Theodor Fechner, *Das Hauslexikon, Vollständiges Handbuch praktischer Lebenskenntnisse für alle Stände* (1834) 63.

¹⁰³ Audrey Davis and Toby Appel, *Blood-letting Instruments in the National Museum of History and Technology* (1979) 15.

¹⁰⁴ Elke Angelika Maibaum, *Der therapeutische Aderlass von der Entdeckung des Kreislaufs bis zum Beginn des 20. Jahrhunderts, Versuch einer kritischen Neubewertung* (1983) 41, 57.

suffering from severe hypertension, heart failure, emphysema, polycythaemia, or other conditions (which early modern physicians will have been faced with in more advanced stages than today), shows, however, that consequent physiological changes such as improved peripheral and cerebral perfusion, hypovolaemia and thus normalization of arterial pressure, haemodilution and a lowered haematocrit (red cell ratio to total blood volume) facilitating blood flow, speak for the therapeutically beneficial effect of blood-letting which patients reportedly experience as feelings of physical relief and well-being. Hence, even in modern medical practice, it has been suggested, blood-letting may be appropriate in cases of acute glaucoma, acute lung oedema, eclampsia, polycythaemia, haemochromatosis, or porphyria.¹⁰⁵

ii) Purging – the ‘Noblest Form of Healing’

As with blood-letting, Bontekoe and Gehema in particular unleashed an ongoing controversy over the contentious issue of purging - widely considered a panacea and the ‘noblest form of healing’.¹⁰⁶ Reimmann notes that, apart from a few disputations about ‘Excreta’, relatively little had been written, or publicized in German book catalogues, on this topic.¹⁰⁷ In his diatribe *Grausame Medicinische Mord-Mittel*, Gehema refers to a recently published Marburg medical disputation entitled *de purgantium de foro medico proscriptio* [concerning the banning of purgatives from the medical forum] in which, Gehema contends, ‘even the simplest reader will find all the objections purging doctors generally voice, very judiciously resolved’.¹⁰⁸ According to Gehema, ‘everybody’ was ‘stuck with the notion that without purges and enemas he cannot be helped and becomes highly anxious unless he opens his back passage once or several times daily’.¹⁰⁹ Both he and Bontekoe relentlessly attacked medical practitioners with accusations that their

frequent purges still rest upon the very absurd idea that bodies who get a fever are putrid, so they want to sweep out this nest like charwomen with scrubbing brushes, floor polishes, and buckets full of *Apozema* [...]; but what cleaner hired to clean a

¹⁰⁵ Maibaum, *Therapeutische Aderlass* 80-98.

¹⁰⁶ Zedler, *Universal-Lexicon* XXIX (1741) 1649.

¹⁰⁷ Reimmann, *Versuch* (1713) part VI, 833.

¹⁰⁸ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 48.

¹⁰⁹ Gehema, *Richtige und sichere Wegweiser* (1691) E3.

house was ever so silly as not only to sweep out the dirt but throw out the household goods as well, and finally pull the whole house from under one's feet? Well, this is what our doctors of the senna leaves do: they purge not just the bad humours but the good ones at the same time, and not infrequently these alone, as there are often not that many bad humours that need purging or, if there are, the purges have no effect on them but, sweeping through them, carry, *en passant*, the good and essential fluids out of the body [...]. That these are being corrupted through purging is evident from the fact that if a healthy man takes a purgative he passes the very same filth about which our piss- and muck inspectors make so much fuss.¹¹⁰

Besides driving out more good than bad humours,¹¹¹ frequent purging, Bontekoe insists, weakens the body, causes loss of appetite, increases thirst, and is in thousands of cases unnecessary: 'Just as it is wrong to believe that the gall, pituitary gland, serum and melancholia are the true causes of diseases, it is equally not true that there are things that can purge them.'¹¹² Gehema, to discredit its use, strongly insists on the harmful consequences of indiscriminate 'emaciating' purging, next to blood-letting, the 'cruellest medical murder method'.¹¹³ Approvingly, he cites Ettmüller and Waldschmidt for similarly condemning purging on the grounds that it drains good body fluids as much as the bad, ruins the blood and weakens the body.¹¹⁴ Waldschmidt, like the Jena professor Wedel, alleges Gehema, preferred the use of diaphoretics ('Schweiß-Mittel') as safe, health-restoring evacuating agents driving out harmful elements rather than sending the sick to an early death with repeated emaciating purges.¹¹⁵

Gehema also deplores the administration of enemas (except for tobacco enemas) as a 'strange and curiously invented torture-rack' and 'equally harmful', and the 'not insignificant danger of careless application, there being many examples of an injured or torn rectum, occasionally followed by gangrene and a most miserable death'.¹¹⁶ Geuder (and others) protested against such a sweeping rejection of all purging and enemas, firmly differentiating between the mild purging practices of judicious physicians and the dreadful symptoms Gehema describes, resulting from 'careless abuse or gross, irresponsible blunders', of which, according to Geuder, there are only 'a few examples as

¹¹⁰ Bontekoe, 'Laatste reden' (1681) 69-72; Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 41-2.

¹¹¹ It was also thought that through purging one could draw 'bad humours' from more distant parts or organs. See Baumann, *Johan van Beverwijck*, 290.

¹¹² Bontekoe, *Werken* (1689) I, 224, 232; Blankaart, *Von Würckungen* (1690) 10; Theodorus Schoon, in *WaareOeffening* (1692) 474-80, expresses very similar views.

¹¹³ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 36-48.

¹¹⁴ *Ibid.*, 37-40.

¹¹⁵ *Ibid.*, 40-41.

against thousands of others that have concluded happily'.¹¹⁷ 'Countless undeniable proofs', after all, sufficiently confirmed the usefulness of certain kinds of dissolving, softening, soothing and evacuating' enemas.¹¹⁸

Cohausen, likewise in favour of 'harmless laxatives' that are 'without doubt useful to maintain health',¹¹⁹ also disagrees with Gehema 'who thinks no disease requires a purgative, and that in constipation hot water mixed with a little salt is enough to open the bowels'. Cohausen doubts whether any experienced practitioner will follow this advice.¹²⁰ Waldschmidt, notwithstanding Gehema's account, in a letter to Dolaeus gives a more nuanced view on this topic. Commenting on the Marburg disputation on the 'absolute banishment of all forms of purging', he remarks, 'I cannot agree in all points with the author, because his intention is to ban it altogether. [...] I consider it safest to remain on the middle road, and neither hold with those putting all trust into purging alone, nor with those going to the other extreme'. Waldschmidt tells Dolaeus that he had read Gehema's fierce diatribe before publication and been able personally to discuss its content with him. 'Nevertheless', Waldschmidt insists, despite having 'a thousand times observed that they can cause more harm than good', purges are at times an 'unavoidable necessity' to cleanse the body of impurities before they turn into a 'extraneous ferment causing many and grave illnesses'. Hence he concludes, 'I will never let myself be persuaded to side with those who without qualification banish purging from medical practice altogether'.¹²¹

Bontekoe and Gehema indeed overstate their case by insisting that all purgatives, no matter how gentle, are 'true *vesicatoria* that cause small blisters in the stomach and intestines, as do Spanish flies on the skin', and that all diseases commonly said to be healed through purging are better dealt with through perspiration and urination.¹²² Hoffmann, although opposed to the 'wholesale condemnation and rejection by those *Neotericis*' of all purgatives, agrees that 'those containing a very sharp extraordinary salt, comparable to the one found in Spanish flies, which cause membranes and glands to contract, liquidate the moistures, and confuse the natural composition of the blood

¹¹⁶ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 49-53.

¹¹⁷ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 63.

¹¹⁸ *Ibid.*, 80.

¹¹⁹ Cohausen, *Neothea* (1716) 415.

¹²⁰ *Ibid.*, 242.

¹²¹ Geuder, *Heilsame Medizinische Lebens-Mittel* (1980[1689]) 74-6.

¹²² Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 40-2; Bontekoe, *Werken* (1689) I, 229, 231, 247-8.

by increasing its innate fermenting motion', were to be avoided.¹²³ Indeed, purging was 'highly harmful' when the 'life spirits' were in 'confused motion', the natural composition of the blood 'agitated' and the bowels very constipated, when the body fluids were mixed with 'sharp, bilious, sulphurous salts', as well as in all diseases of a serious nature such as bad fevers, inflammations, diarrhoea, bleedings, or consumption.¹²⁴ Viscous, sluggish, slimy fluids, should, however, be extracted with gentle purges in small regular doses.¹²⁵ In support of his argument, Hoffmann refers to Le Bœ Sylvius, to Bontekoe's translator, Albrecht, and also to Waldschmidt.¹²⁶

Blankaart, though not in favour of frequent strong purging, which in his view disposed patients to weakness, dropsy, *Scharbock*, jaundice, colicky pains, even 'red dysentery', convulsions and faints, also does not debar gentle purges in cases of constipation and advises beer-soups, bouillon, tea or coffee after a purge to promote a satisfactory outcome. With his acid-alkali conception of physiology, he attributes the convulsive effects of purges to their 'sour and salty qualities which dispose the blood to eject many sharp particles into the stomach and intestines so that the filth issues from above and below and the patient is attacked by convulsions and faints, yes soon becomes fatally ill'.¹²⁷ The drastic effects of 'almost all purgatives' are confirmed by Johann Gottfried Berger, who states they weakened people to such an extent they were often long unable to recover and at times even died in consequence.¹²⁸

The use of 'sugared *apozema*', contends Bontekoe, are 'big obstacles' to a thorough purge, producing nothing but 'acidity and mucus', water, or tea, being much better digestive aids and, if one must purge at all, only gentle means should be employed, e.g. Senna or prunes. But if done too often this was just as damaging,¹²⁹ a view also endorsed by Gehema who in severe cases of constipation prescribed 'volatilia, calida and liquida', Chinese tea, or smoking a pipe of tobacco.¹³⁰ With dropsy, he considers an emetic 'far more effective' than purging to reduce the body fluids.¹³¹ Blankaart advises readers not to 'go about these things blindly and demand purgatives from a lunatic apothecary, or

¹²³ Hoffmann, *Eigentliche Untersuchung* (1696) 99.

¹²⁴ *Ibid.*, 101.

¹²⁵ *Ibid.*, 102.

¹²⁶ *Ibid.*, 102-4.

¹²⁷ Blankaart, *Von Würckungen* (1690) 15-29; Schoon, *Waare Oeffening* (1692) 481.

¹²⁸ Johann Gottfried Berger, *An des allerdurchlauchtigsten [...] Bericht vom Carls-Bade [...]* (Wittenberg, 1709) 221-2.

¹²⁹ Bontekoe, *Werken* (1689) I, 228, 233; *Tranctaet* (1679) 144-7.

¹³⁰ Gehema, *Grausame Medicinische Mord-Mittel* (1980[1688]) 45.

¹³¹ Gehema, *Thee-Geträncke Curiret* (1687) 5.

barber, but to discuss them with a sensible physician, the master of medicine'. An apothecary could only be regarded as a 'cook', and a barber a mere 'lackey'; both often knew 'as much as a blind man judging colours'.¹³² Gehema also condemns the 'many harmful and inhuman' purgatives found in apothecaries 'which, at the same time, usher many peoples' souls out of existence',¹³³ while Heinsius deplored the 'crack-brained horde of Galenists' who, despite the immeasurably high cost in human lives, sought to extirpate deeply-rooted ailments from the blood with violent, frequently repeated, 'murderous' purgatives.¹³⁴ Yet, practitioners who completely rejected all bowel-cleansing agents, in his view, committed 'an almost equally contemptible dastardliness', there being, 'nothing wrong with laxatives that merely act as a lubricant to facilitate the evacuation of impurities without violent irritation of the glands'.¹³⁵

In the treatment of venereal disease purging was considered an essential part of the cure. Heinsius denounces not only the excruciating and extremely dangerous corrosive salivation methods with mercury,¹³⁶ causing inflammation and excoriation of the mucous membranes and the tongue, appalling bad breath, colic and diarrhoea, but also the excessive sweating cures, blood-letting and blistering purges used to 'prepare' the body and to drive out the 'acidic and caustic Venus ferments' so that the mercury would not take on their corrosive nature. Instead of tempering the acidity of the body fluids, these methods increased it and caused the most severe pains.¹³⁷ At the mercy of surgeons, barbers, quacks and vagrants who, Heinsius contends, considered it their sole right to treat venereal disease (deemed by most physicians below their dignity and reputation), patients were forced to entrust their health and lives to the ignorance of such 'scum', often losing both.¹³⁸

In the medical bestseller *Venus belegerd en ontzet*, edited by Blankaart, a collection of case studies, including a revised and enlarged version of some chapters of his *Nieuwe Konst-Kamer der Chirurgie*, and containing cures for venereal diseases by Blankaart, Le Bœ Sylvius, Sydenham, and others, Blankaart's cure for gonorrhoea consists of a careful purging regime, 'mercurial pills', salivation, sweating and drinking tea or coffee. He also

¹³² Blankaart, *Speise- und Tisch-Buechlein* (1695) 25.

¹³³ Gehema, *Reformirte Apothecker* (1688) 17.

¹³⁴ Heinsius, *Gemarterte Venus-Priester* (1711) 130.

¹³⁵ *Ibid.*, 131.

¹³⁶ Ten Brink, in *Nicolaas Heinsius*, 29, also lists a *Verhandeling over het Kwikzilver* (The Hague, 1704) by Heinsius [not seen].

¹³⁷ Heinsius, *Gemarterte Venus-Priester* (1711) 77; 122; 133.

¹³⁸ *Ibid.*, 75-6.

advises injecting strong tea through the penis, ‘bathing it frequently and for some time in warm coffee or tea or warm milk mixed with camphor’, and applying a dressing soaked in ‘Bole, Camphore and Brandy’.¹³⁹ For Sydenham, however, purging for a month, combined with twice-daily enemas, followed by blood-letting, is the most important aspect of his cure, in order to extract the offending fluids, as well as gall and serous body fluids, or at least to ‘effect such a change in the natural humours of the body that they do no longer provide food for the Venus-poison’. Sydenham stresses the necessity of frequent purging even if patients developed a strong aversion to it, as reason and experience showed that various purgatives used often and over a long period of time cured gonorrhoea.¹⁴⁰

In view of the drastic character of the purging methods which continued to be widely used in late seventeenth and eighteenth century medical practice, its emphatic condemnation by the Dutch Cartesian medical reformers and their German counterparts seems essentially justified. Zedler’s *Universal-Lexicon* reflects the considerable impact the radical critique of purging had, at least to the extent of urging a much more cautious approach to using purgatives than had been customary in the past, repeatedly citing Bontekoe as a leading voice on this question. In defence of Bontekoe, Zedler states that although he called purging the ‘most harmful invention for the body and life of man’, he had ‘only addressed its abuses, since following the common method the cure of all illness, always and everywhere, began and ended with purging’.¹⁴¹

In an effort to correct the overabundance of arbitrarily concocted and ineffective remedies, including innumerable purgatives, found in apothecary shops, a *Nieuw-licht des apothekers of nieuwe gronden en fondamenten der artzeni - en chymise-bereiding, Nuttig voor alle apothekers en chirurgijns* (5th edn. 1683),¹⁴² by the Middleburg physician Antonius de Heide, with notes and ‘learned instructions’ by Sylvius, Willis,

¹³⁹ S. Blankaart, *A New Method of curing the French-Pox, Written by an Eminent French Author, Together with the Practice and Method of Monsieur Blanchard, As also Dr. Sydenham’s Judgment on the same, To which is added Annotations and Observation* (London, 1690) 180-1; Blankaart, *Belägerte [...] Venus* (1690) 74-5, 88.

¹⁴⁰ *Ibid.*, 415, 423.

¹⁴¹ Zedler, *Universal-Lexicon* XXIX (1741), see ‘Purgantz’ 1648-713, here 1649; In his treatment regime for gravel, Bontekoe, in *Tractaat* (1679) 229, does, in fact, advise giving an enema of rape-seed oil and an enema made of water in which Senna leaves were boiled, as well as an opium pill to stop colicky pain.

¹⁴² The title of the first edition (1682) strongly reflects the reforming efforts of De Heide’s *Nieu[w] lig[ht] der apothekers, aanwysende de onkennis omtrent de kragt der geneesmiddelen, en verbeterende grove misslagen in ‘t voorschrijven en bereiden der geneesmiddelen, gemeenlijk begaan, Beneffens eenige ontleed- genees en heel-kundige waarnemingen. Verseld met een betoog van onsekerheid der Pis-kiekerie en bedriegelijckheid der Pis-kijckers* [not seen]. See Stoeder, *Geschiedenis*, 166-7.

and Blankaart, appeared in both Dutch and German.¹⁴³ This useful handbook for apothecaries, comprising a clear and concise anthology of the origin of medicinal plants, of their various parts, qualities, and medicinal purposes, including chapters on 'what an apprentice has to know and understand', such as the art of distillation, the composition of medicines and their formulas, as well as a discerning appendix by De Heide on errors in drug preparation, is presented by its German translator, Johann Schreyer, as a refutation of the 'peculiar Bontekoe and the doting Gehema' who had called apothecaries' shops 'murder dens' and the medicines therein 'murder devices' for reasons 'already openly refuted and ridiculed,¹⁴⁴ and shaming anyone who agreed with them'.¹⁴⁵

Not unlike Bontekoe and Gehema, however, De Heide criticizes the often useless combination of various waters, vinegars and herbs which depleted the potency of remedies instead of enhancing them. Pills, plasters, and ointments generally contained too many and often incompatible ingredients, thrown together 'without cause or reason'.¹⁴⁶ Two or three purgatives, for instance, made up of a few 'simplicia', would suffice in any dispensary, instead of the many ineffectual potions with which they were crammed full.¹⁴⁷ 'Truly', states the author, 'as often as I see those mixtures, I marvel how people come up with such concoctions, and it is even more surprising that the advocates of such mishmash, on the mere recommendation of their inventors, hold them in such high regard, notwithstanding that the effects ascribed to them do not materialize.'¹⁴⁸ De Heide reflects that some doctors 'are so wrong-headed that, as often as they visit the patient, they find it necessary to prescribe something, not taking into account how, due to too many, and differing, medicines many a patient loses his life'. Because of their arbitrary misuse, their potency was frequently not sufficiently appreciated. Nor, in this way, could one be sure of the success of any particular medicine, it being more likely that the patient would regain health without any of them.¹⁴⁹

The poet and social critic Johann Michael Moscherosch (1601-1669) noted that sheer

¹⁴³ [In Dutch and German usually listed under Blankaart's name], *Neues Liecht vor die Apothecker, wie selbige nach den Grund-Regeln der heutigen Destillier-Kunst ihre Arzeneyen zubereiten sollen* [...] (Leipzig, 1690; 1693; 1742).

¹⁴⁴ Most probably the anonymously published *Aufrichtig eröffnete Gedancken über den Reformirten Apothecker* (Freystadt, 1690) [not seen], attacking Gehema's work *Der Reformirte Apothecker* (1688). See Schwann, *Janusz Abraham Gehema*, 44.

¹⁴⁵ 'Blankaart' [De Heide], *Neues Liecht* (1693) Preface.

¹⁴⁶ *Ibid.*, 772-7.

¹⁴⁷ *Ibid.*, 758.

¹⁴⁸ *Ibid.*, 779; see also 707, 709, 754.

¹⁴⁹ *Ibid.*, 691, 705.

fear of taking medicines made the sick recover from illness, their being often 'so repulsed by them, due to their stink and nasty taste, that even the most severe diseases, from dread of thus being martyred, gladly quit the human body'.¹⁵⁰ Ingredients such as 'mummy, human flesh, -fat, or -bones, moss from the skull of a hanged thief, dog-, cat-, horse meat and fat'¹⁵¹ were not uncommon and still used at the beginning of the nineteenth century, as confirmed by Rambach.¹⁵² Christian Franz Paullini (1643-1712), city physician at Eisenach (near Trier), exploiting popular superstition, argued that the 'quintessence' of all food is contained in the excrement, claiming in his notorious *Heilsame Dreck-Apotheke* (1695) that 'almost all diseases, yes, even the most serious and poisonous, and injuries caused by magic, from head to toe, in- and outside, were fully cured with faeces and urine'.¹⁵³ This work sold out so quickly that a new enlarged edition appeared the same year, and again in 1696, followed apparently by a third (1699) and fourth edition (1714).¹⁵⁴ Paullini justifies his hair-raising remedies with frequent references to well known German medical authors such as Friedrich Hoffmann, Johannes Dolaeus, Simon Paulli, and others, as well as the journal *Ephemerides*. He scoffs at those who direct their thoughts in all illnesses towards the *Scharbock* which, though 'invisible', has 'taken root everywhere' - a clear reference to Bontekoe, as is the suggestion in the prefatory *Lobgedicht* that 'many a simpleton thinks he will never die if only he drinks tea, coffee and chocolate'.¹⁵⁵

In his satire *Wunderliche und wahrhaftige Gesichte Philanders von Sittenwald* (1650), one of the most popular, influential and frequently reissued works of seventeenth century German literature, a 'true mirror of the time', read by 'all estates',¹⁵⁶ with an 'unusually high representation in private seventeenth and eighteenth century libraries',¹⁵⁷ Moscherosch mocks the hopelessly antiquated medical profession and apothecaries of his time which, given the persistence of their traditional methods, had by the late seventeenth and early eighteenth century not lost its topicality. In a visionary procession of the dead,

¹⁵⁰ Heinrich Dittmar (ed.), *Wunderliche und wahrhaftige Gesichte Philanders von Sittenwald, das ist Satirische Schriften von Johann Michael Moscherosch* [reprinted in part from 1650 edn.] (1830) 178-9.

¹⁵¹ *Ibid.*, 180.

¹⁵² Rambach, *Versuch* (1801) 325, 379.

¹⁵³ Christian Franz Paullini, *Heilsame Dreck-Apotheke, wie nemlich mit Koth und Urin fast alle, ja auch die schwereste, giftigste Kranckheiten und bezauberte Schaden, vom Haupt biß zun Füßen inn- und äusserlich, glücklich curiret worden* (Frankfurt/Main, 1695); See also Baas, *Outlines*, 547.

¹⁵⁴ See the Frankfurt and Leipzig *Catalogus Universalis* entries: 1696 II, 1699 I, 1714 I.

¹⁵⁵ Paullini, *Heilsame Dreck-Apotheke* (1696) 6.

¹⁵⁶ Heinrich Dittmar, 'Über das Leben und die Schriften des Joh. Michael Moscherosch', in Dittmar, *Wunderliche und wahrhaftige Gesichte*, 25-78, here 28.

¹⁵⁷ *Neue Deutsche Biographie* XVIII (1996) 166-8.

Death with a lyre walks in front, followed by many *Medicos* riding on mules - their eyes 'wrinkled and squinting from much nose-wrinkling inspection and smelling of urine' with doctoral candidates completing their *cursus Doctorandum* by literally running around their mentors, their state of knowledge being that of a 'Thor' [fool] - the second syllable of 'Doktor'.¹⁵⁸ A long line of apothecaries follows with 'clinking stones, pestles, mortars, suppositories, *bain-maries*, spatula, syringes, etc., all loaded with deathly shots and powders, as well as with many tins and boxes labelled as medicine but containing poison'.¹⁵⁹ Apothecaries' shops are armouries of war and destruction, their tins ['Büchsen' in German also meaning 'shotguns'] filled with explosives to shatter the 'portal' to human life; clysters are compared to pistols, pills to bullets, and the *medicamenta purgantia* are 'the right purgatory', where apothecaries, the armourers of doctors, represent 'hell', barbers are 'devils' and the patient is the 'poor tortured, lost and damned soul' at the mercy of the *Medici*, i.e. Death.¹⁶⁰ They pass judgement of life or death on the 'poor sinner' by the mere appearance of his urine and excrement, in which they 'place all their trust, like in a Delphic oracle'.¹⁶¹ Given such medical practices, Bontekoe's and Gehema's vehement protests do not seem unjustified. Like Bontekoe and Gehema, Moscherosch condemns this 'gruesome inquisition whereby, without conscience and knowledge, one thus chases man's life and soul out of the body with unnecessary purging and blood-letting!'.¹⁶²

Blankaart, himself a trained apothecary but, like Bontekoe, in favour of physicians preparing their own medicines,¹⁶³ admits to having frequently observed even very eminent physicians displaying great ignorance of 'pharmacy'. One such highly regarded doctor could only prescribe medicines helped by a long list of formulas copied into a small book by Blankaart which he kept in his bag at all times. No physician, held Blankaart, should be permitted to practice without adequate training with a good apothecary and chemist (as well as a good surgeon),¹⁶⁴ himself offering to demonstrate to lovers of chemistry 'all chemical experiments useful for attaining a thorough knowledge of philosophy and the art of medicine'.¹⁶⁵ He advocates a 'new *pharma-*

¹⁵⁸ Moscherosch, 'Todtenheer, Viertes wunderliches und wahrhafftiges Gesicht Philanders von Sittenwald', in Dittmar, *Wunderliche und wahrhafftige Gesichte*, 167-90, here 167-9.

¹⁵⁹ Ibid., 169-75.

¹⁶⁰ Ibid., 175-6.

¹⁶¹ Ibid., 180.

¹⁶² Ibid.

¹⁶³ Blankaart, *Collectanea medico-physica, Oft Hollands Jaar-Register* (1680) Dedication and Preface.

¹⁶⁴ Blankaart, *Verhandelinge van de Opvoedinge* (1666[1684]) 277-8.

¹⁶⁵ Blankaart, *Neue heutiges Tages gebräuchliche Scheide-Kunst* (1708) 175.

copea more in agreement with the methods of contemporary practice', the elimination of 'all usual compositions and many simple ones', and suggests a tax on every medicine, to prevent apothecaries making a living from them being 'ill talked of'. An apothecary's 'diploma academicum' was to be inspected prior to practice to forestall many 'irregularities' such as quacks and unqualified apothecaries treating patients, as was still the case in Hamburg as late as 1800, where, according to Rambach, an 'unbelievable anarchy' prevailed with most of the forty-three apothecaries being unqualified and supervision, or inspection, by physicians being non-existent.¹⁶⁶ To curb accumulation of 'bad' medicines in apothecary shops, Blankaart advises regular inspection by an 'impartial' group of competent physicians four times yearly,¹⁶⁷ by all accounts an overly optimistic suggestion and a practise in many cases not upheld even when a *collegium medicum* had been instituted.¹⁶⁸

In a *Verhandeling van de Operatien ofte Werkingen der Medicamenten In 's Menschen Lighaam* (1690; 1698; 1700; 1703; 1709; 1729) a treatise on the 'workings of medicines in the human body', speedily translated into German,¹⁶⁹ Blankaart sets out to explain the 'true cause of their various effects' and provides a plan for a 'new pharmacy, following the present method of prescribing [blood-thinning, acid-tempering] medicines'. In the same vein, Gehema presented a 'project' on apothecary reform, following a 'rational *medendi methodo*, now adopted by all sensible and conscientious physicians',¹⁷⁰ in which he scathingly condemned the practices of most apothecaries and sought to drastically reduce and simplify the range of useful herbs and drugs, dismissing outright 'all those dried hearts, livers, peritonea, intestines of wolves, foxes, bears, pigs, rabbits, placentas of humans and animals, umbilical cords etc.', albeit retaining any animal or human parts such as bones (to extract the highly prized *sal volatile*), dried toads, cantharides, millipedes and vipers.¹⁷¹

¹⁶⁶ Ibid.; Rambach, *Versuch* (1801) 370-3.

¹⁶⁷ Blankaart, *Neue heutiges Tages gebräuchliche Scheide-Kunst* (1708) 175.

¹⁶⁸ See Sabine Sander, 'Die Bürokratisierung des Gesundheitswesens, Zur Problematik der "Modernisierung"', in Werner Friedrich Kümmel (ed.), *Medizin, Gesellschaft und Geschichte VI* (1987) 185-218.

¹⁶⁹ Blankaart, *Von Würckungen Derer Arzneyen In dem Menschlichen Leibe [...] Wie auch Ein Entwurf von einer Neuen Pharmacie* (1690; 1699; 1710) here 1690 edn.

¹⁷⁰ J. A. Gehema, *Der Reformirte Apothecker fürstellende ein ohnmaßgebliches Project, wie und welcher Gestalt die heutige Apothecken billich zu reformiren, und nach einer bey allen verständigen und gewissenhaften Medicis nunmehr angenommenen rationalen medendi methodo einzurichten weren* (Bremen, 1688; Dresden, 1689; Basel, 1690; Dutch transl.: 1690) here 1688 edn. 41-2.

¹⁷¹ Dutch editions: Amsterdam, 1690; 1698; 1700; 1703; 1709; 1729; German editions: Leipzig, 1690; 1699; Augustae Vindel [Augsburg], 1710) here German 1690 edn. *Von Würckungen*; See also the Dutch book review by Vandevelde, 'Bijdrage [...] Blankaart' (1924) 491-2.

Against accusations that he had called most medicines ‘cruel murder tools’ and wished to ban from apothecary shops and general practice all sugary syrups, preserves, confectionary, ‘electuaria’, juleps, clysters, purgatives, and much else, Gehema defended his, and Bontekoe’s, methods for treating patients, insisting were these items indeed banned, apothecary shops would become arsenals of health, comparable to a well maintained garden from which the weeds were eradicated.¹⁷²

Daelmans’s method of using very few drugs in his medical practice, ‘following the example of the two great physicians Bontekoe and Blankaart’,¹⁷³ likewise, had not endeared him to the apothecaries or his medical colleagues in Antwerp who maligned him with numerous libels and defamed him in ‘big letters written on the porch of [his] house’. Due to the controversies over the treatment of his patients and the use of ‘dangerous drugs’ such as opium and antimonium, Daelmans, after four years of practice, left Antwerp on 3 January 1687 for the East-Indies.¹⁷⁴

¹⁷² Gehema, *Vertheidigter Reformirter Apothecker* (1690) 11.

¹⁷³ Daelmans, *Nieuw hervormde geneeskunst* (1687) last page.

¹⁷⁴ *Ibid.*, 1694 edn., Preface; See also Ferguson, ‘A Belgian Physician’s Notes’, 1-2.

Conclusion – A Medical Reform Programme?

‘During the last forty years’, Albrecht von Haller commented in 1751, ‘a wholly new generation of medical doctors and natural scientists has emerged’, reared on the lectures of Boerhaave. He added that Boerhaave mentioned only few Greek and Latin authors or ‘new’ late seventeenth century authorities, thereby emphasizing that the old medical knowledge had been superseded by the new.¹ Lorenz Heister made a similar point, in 1744, remarking that of the late seventeenth century sects – the ‘Cartesian, the Sylvian or Tachenian, the Eclectic, the Mechanical’ [which he calls the ‘Hippocratean or sensible one’], and the ‘Stahlian’, the first three had ‘almost disappeared and today in Germany practically none save the Mechanical and the Stahlian are known to which most of our Medici subscribe’.²

Many influences contributed to the ‘move from broadly conceived, learned explanations of health and disease to a more result-oriented, empirically derived medicine’ which, as Harold Cook points out, ‘cannot be subsumed under any one philosophy, whether it be Hermetic, vitalistic, Platonic, Aristotelian, Baconian, experimental, mathematical, mechanical, corpuscular, Newtonian, Cartesian, or any other’, because they ‘all played important parts in the intellectual life of the period’ and impinged upon medical debates, the rise of a ‘scientific’ approach being just ‘one among many changes to affect medical learning’.³

The broad conviction running right through German intellectual and academic culture during the Early Enlightenment that the true principles of medicine must be based on a natural philosophy consonant with general philosophical principles meant that a wide range of scholars and commentators with no specific medical training, ranging from Thomasius to Leibniz, Buddeus, and Reimmann to Wolff, were reading medical books and assessing them in terms of their own approach to natural

¹ Römer and Usteri, *Herrn von Hallers Tagebuch* II, entry:1751, 424.

² Lorenz Heister, *Practisches Medicinisches Handbuch, Oder Kurzer doch hinlänglicher Unterricht Wie man die innerlichen Kranckheiten am besten curiren soll, Nebst einer Abhandlung von der Vortrefflichkeit der mechanischen Artzney-Lehre*, 2nd edn. (Leipzig, 1759 [1744]) 8.

³ Harold Cook, *The Decline of the Old Medical Regime in Stuart London* (1986) 25, 260.

philosophy. The stress of the Cartesian self-proclaimed ‘reformers’ on the necessity of basing a properly directed medical reform programme on ‘true’ philosophical principles, was in important ways echoed by the Eclectics and Wolffians who incorporated the mathematical-mechanist approach of leading medical scholars like Friedrich Hoffmann, Johannes Bohn, and Johann Gottfried Berger into their systems. Thomasius and the Eclectics not only found useful elements in their work but approved of their general preoccupation with philosophy. Buddeus, for example, based his philosophical treatise *Elementa philosophia instrumentalis* (Halle, 1706-7) on Berger’s mechanist model of physiology, and dedicated his *Analecta Historiae Philosophiae* (Halle, 1706) to Hoffman, saying ‘You very rightly join the medical art to the philosophical’.⁴

In the case of Germany, Cartesianism as an explicitly philosophical label and system of thought was certainly somewhat marginal. But as a general trend towards independent critical thinking, mechanistic models insisting on transparent, plainly evident criteria of truth, and mathematical quantitative reasoning in medicine, as in science and philosophy, it was pervasive. Taking into account how even those who disagreed and thought differently nevertheless often incorporated elements of their thinking into their own terminology, rhetoric, and medical practice, the controversies studied in this thesis confirm that its impact extended well beyond the academic sphere and medical professions to the intellectual elite as a whole and the wider social arena.

After around 1720, the Cartesians as an identifiable group disappeared in Germany, as elsewhere.⁵ But during the 1720s, anti-mechanist Pietists like the influential theologian Joachim Lange (1670-1744), the Stahlians, and others, often identified the pervasive mechanism in German scientific, medical and other thinking as being ‘Cartesian’ in origin and inspiration. Lange denounced ‘pseudo-Cartesians’, as he calls them, like Arnold Geulincx and Burchardus de Volder, as being ‘primarily responsible for laying the intellectual foundations of the mechanistic

⁴ Trevisani, ‘Johann Gottfried Berger’, 47-8, 55.

⁵ Israel, *Radical Enlightenment*, ch. 25, ‘The Collapse of Cartesianism’, 477-501, 559-61.

Naturalism and fatalism endangering German higher education and society'.⁶ Earlier, in 1713, the physician and 'radical separatist' Johann Conrad Dippel, polemicized against the materialist mechanist orientation in medicine and thinking about nature, stretching from ancient to modern times via 'Demokritus, Leucippius, Epikurus, Hobbes, Renatus des Cartes, Gassendus, Galilaeus, und Aristoteles' to its present-day proponents, the Dutchmen 'Blankaart' and 'Bontekoe'.⁷

No doubt the dissemination of Cartesian influence took various forms, but the structure of medical controversy in the German language strongly suggests Bontekoe and his allies played a prominent role in shaping the growing mechanistic orientation of medical attitudes and debate in German society. This was first noted by Johanna Geyer-Kordesch, in 1981. In her articles 'Deutsch-sprachige Bücher aus Holland', and on Early Enlightenment Dutch and German fever theories, she pointed out that the Dutch reforming physicians, headed by Bontekoe, formed a closely-knit 'group', widely noted and influential in Germany, which had been 'almost completely but unjustly ignored by medical historians'.⁸

This present study hopes to have contributed to our understanding of their pervasive influence on German medical debate and its wider repercussions in society, among them changes in popular ideas about medicine. These included notions of harmful acidic imbalance in the body, the imperative need to maintain the unimpeded flow of the body fluids, to prevent and counteract 'thickening of the blood' and the *Scharbock*, with daily substantial intakes of warm, alkaline fluids like the new fashionable beverages tea, coffee and chocolate, and an acid-tempering diet, amounting, as Francesco Trevisani observed, to a veritable 'scorbutomania'.⁹ As mentioned earlier, preoccupation with ensuring the thinness of the blood in this way developed into what Von Haller, in 1750, called a 'common prejudice'.¹⁰

The controversies about blood-letting and purging, and those over tea, coffee and tobacco, all illustrate the clash between traditional elements of popular medical culture, based on humoral pathology, and the intrusion into the public sphere of

⁶ Israel, *Radical Enlightenment*, 546-51, here 551.

⁷ Geyer-Kordesch, 'Deutsch-sprachige Bücher', 105.

⁸ Geyer-Kordesch, 'Fevers and other fundamentals', 101.

⁹ Trevisani, *Descartes in Germania*, 285; See above, ch. V, 188.

new perspectives generated by the theories and practice of these Dutch medical ‘reformers’ filtered through the German debates surrounding their publications. The large number of translations, editions and reissues of their works point to the wide diffusion of their ideas in the German vernacular, reaching a substantial educated readership. But, as shown, evidence like Dippel’s scathing reference to ‘artisans and peasants’ lugging ‘Cartesian bits’ around,¹¹ implies that the ideas of this group, even if in a fragmented fashion, penetrated to some extent to social strata beyond those likely to read their books through the explanations of medical practitioners, through the pulpit and conversation, and not least via the new milieu of coffee houses and women’s so-called ‘Caffee-Schmäußgen’. As Keith Thomas aptly observes, ‘at all times most men accept their basic assumptions on the authority of others. New techniques and attitudes are always more readily diffused than their underlying scientific rationale’.¹²

Some eighteenth and nineteenth century historians did remark on the very wide, if passing, popularity of their ideas but dismissed the views of Craanen, Bontekoe and Gehema in particular as mere ‘fancies’ [Grillen] or ‘extremely harmful’.¹³ However, as highlighted by Geyer-Kordesch, the conscious reaction of the Stahlians against the penetration of the Cartesian mechanist conception of physiology and illness, earlier so successfully popularized by this group of medical ‘reformers’, and incorporated in much revised form by Boerhaave and, in Germany, by Hoffmann and Von Haller, in constructing their ‘*medicina mechanica*’,¹⁴ amply testifies to their substantial contribution in shaping the terms, priorities and agenda of medical debate for some three decades, from the late 1680s to around 1720, more or less throughout Germany and the German-speaking Baltic regions. It testifies also to the profound intellectual, scientific, and general cultural impact of the Early Enlightenment Dutch context on Protestant Germany.

The new academic theorizing on which the Dutch Cartesio-Sylvian reformers

¹⁰ Römer and Usteri, *Herrn von Hallers Tagebuch* II, entry: 1750, 45; See above, ch. V, 188.

¹¹ Geyer-Kordesch, *Pietismus*, 123-4; See above, ch. III, 100-1.

¹² Thomas, *Decline*, 647.

¹³ See above, ch. I, 30, and ch. V, 187.

¹⁴ Geyer-Kordesch, *Pietismus*, 36, 222-7.

and their allies based their 'reform' programme was in some respects, of course, deeply flawed and highly speculative (not all illnesses originate from obstruction or thickening of the blood). There was also much to criticize in the rhetoric and style of argument, particularly of Bontekoe and also Gehema whom one contemporary called Bontekoe's reincarnation. Bontekoe's excessive vehemence and aggressiveness, his scornful criticism of antiquated medical practice and 'title-doctors', earned him the abuse, ridicule and hatred of many colleagues, though his status in Germany was considerably raised by his appointment, in 1683, to the Brandenburg court and his curing the Elector's 'Podagra' with his tea cure. His frequent ramblings detract from the medical issues for whose sake he declared 'war', yet, as Overkamp emphasized, a dramatic claim of sweeping novelty and reform was surely needed to penetrate the resistance and inertia to change deeply rooted ideas and traditional notions about illness and medicine which proved extremely resilient.¹⁵

Without wishing to impose a 'progressivist' perspective, one can fairly say their fight for science-based medical practice and improvement of public health with better wound hygiene, regimens for healthy living, advocacy of beverages prepared with boiled water, and the campaign against indiscriminate blood-letting and purging, as well as efforts to reform apothecaries' 'murder dens', contributed to the re-evaluation of medicine, a new awareness of science and the development of a new medical culture. Many physicians and surgeons, as has been shown, even if not agreeing with the arguments of these 'newest medicis', took issue with and discussed them in their works, carefully weighing the advantages and drawbacks of particular methods such as blood-letting, purging, *setons* and *fontanellae*, and developing a rationale for or against them. Hence, the 'reformers', if not necessarily achieving major changes in medical practice, did manage to throw serious doubt on traditional procedures, challenging the entire medical profession, including surgeons and apothecaries, to reconsider their therapeutic methods. Their efforts to effect a closer integration of medicine, surgery, pharmacology and chemistry coincided with, and possibly contributed to, the beginnings of such a change. Thus, in 1713, Reimmann noted, doubtless thinking in part of the recent establishment of Heister's chair in

¹⁵ See above, ch. II, 76.

anatomy and surgery at Altdorf, in 1710, the ‘dividing wall’ [Scheidewand] that had for centuries existed between medicine and surgery had now been ‘somewhat lifted’ [ein wenig aufgehoben].¹⁶

Finally, the medical ‘reform’ programme of Bontekoe and his allies throws light on the tendency in Early Enlightenment German culture, so foreign to our modern way of thinking, to insist, as do both Thomasius and Wolff, that ‘philosophy’ was as much a practical as a theoretical subject, and its purpose was to improve and rationalize society. Valid medicine, like law and science, to their mind had to be based on philosophical principles. It was Cartesian philosophy initially which offered a new mechanistic rational understanding of the world but also, through its reverberations in the Dutch context, a new secular ideal as to how not only knowledge but also society itself could be reformed and improved.¹⁷ The ideal of a philosophically based medicine improving human life was perhaps most eloquently and far-sightedly expressed by Leibniz in his *New Essays on Human Understanding*, conceived in 1704 but not published until 1765. His notion of the future of medicine is a sensitive, even if rather optimistic, affirmation of the commitment of Early Enlightenment thinkers to the amelioration of society and its general welfare:

As society becomes more civilized it will eventually give more attention to the advancement of medicine than it has done so far: in every country journals of natural history will be issued like almanacs [...]; no sound observations will be left unrecorded; [...] the art of making such observations will be highly developed [...]. The time will come when there are more good physicians [...] so that society will be in a position to give more encouragement to the exploration of nature, and especially to the advancement of medicine; and then that important science will grow visibly, and will very soon reach a level far above its present one. Indeed I believe that this aspect of public policy will become almost the chief concern of those who govern, second only to the concern for virtue; and that one of the greatest results of sound morality and sound politics will be our getting an improved medical science – when men start being wiser than they are now, and when people of high station have learned better ways of using their wealth and power in the interests of their own happiness.¹⁸

¹⁶ Reimmann, *Versuch* (1713) part VI, 815.

¹⁷ Wiep van Bunge, *From Stevin to Spinoza, An Essay on Philosophy in the Seventeenth Century Dutch Republic* (2001) 44-64; Israel, *Dutch Republic*, 889-933.

¹⁸ Gottfried Wilhelm Leibniz, *New Essays on Human Understanding* [1765], eds. Peter Remnant and Jonathan Bennet (1997) § 387.

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Blankaart, Steven (ed.), *Die belägte und entsetzte Venus, das ist, Chirurgische Abhandlung der sogenannten Franzosen, auch spanischen Pocken-Kranckheit, Drüpper, Sjankert, Klap-Ohren, und andern sich dabey befindenden Zufällen, Worinnen derselben Vornehmlich auff des weltbekanten Cartesii Gründe befestigte sichere und unfehlbare Cur vollkommen angewiesen wird, Durch Steph. Blancard Anietzo seiner unvergleichlichen Vortrefflichkeit halber, nebst der beruffenen Medicorum Fr. Sylvii, Th. Sydenham, Joh. Wieri und Ant. Everaers, weil deren Schrifften die ganze Welt durch gerühmet werden* (Leipzig: Johann Friedrich Gleditsch, 1690).

Blankaart, Steven, *A New Method of curing the French-Pox, Written by an Eminent French Author. Together with the Practice and Method of Monsieur Blanchard. As also Dr. Sydenham's Judgment on the same. To which is added Annotations and Observations By William Salmon, Professor of Physick; living at the blew Balcony by the Ditch-side near Holbourn Bridge, London* (London: John Taylor, 1690).

Blankaart, Steven, *Schau-Platz Der Raupen, Würmer, Maden und Fliegenden Thiergen Welche daraus erzeugt werden. Durch eigene Untersuchung zusammen gebracht* [transl.: Johann Christian Rodochs] (Leipzig: Johann Friedrich Gleditsch, 1690).

Blankaart, Steven, *Von Würckungen Derer Arzneyen In dem Menschlichen Leibe, zeigende Die wahre Ursach von deren unterschiedlichen Würckungen. Wie auch*

Ein Entwurf von einer Neuen Pharmacie, Nach der heutigen Art Arzneyen zu verschreiben [transl.:Johann Christian Rodochs], (Leipzig: Johann Friedrich Gleditsch, 1690).

Blankaart, Steven, *Gründliche Beschreibung vom Scharbock und dessen Zufällen, Nebstens einem Ausführlichen Bericht von der Fermentation oder Inwendigen Bewegung der Körper, meistens auf dem Grund Renatus des Cartes gerichtet* (Leipzig: Johann Friedrich Gleditsch, 1690).

Blankaart, Steven, *Accurate Abhandlung von dem Podagra und der Lauffenden Gicht* [by S. Blankaart] *Worinnen deren wahre Ursachen und gewisse Cur gründlich vorgestellt, Auch die herrlichen Kräfte der Milch* [by P. J. Sachse], *Nebst klarem Beweiß, daß solche so wol vor Gesunde als Krancke (vornemlich in der Podagra) die allerbeste Nahrungs-Speise und Hülff-Mittel sey* [by S. Blankaart] *nebst des Herrn Wilhelm ten Rhyne, Med. Doct. und Practici auf Batavien in Ost-Indien, Curieuser Beschreibung, Wie die Chinesen und Japaner vermittelst des Moxa-Brennens und guldenen Nadel-Stechens alle Kranckheiten, insonderheit aber das Podagra gewiß curiren.* (Leipzig: Johann Friedrich Gleditsch, 1690).

Blankaart, Steven, *Collectanea medico-physica, Oft Hollands Jaar-Register Der Genees-en Natuur-kundige Aanmerkingen van gantsch Europa, Beginnende met het Jaar, MDCLXXX. Door eigen ondervinding en gemeen-making van verscheide Heere en Liefhebbers* (Amsterdam: Jan ten Hoorn, 1680-88).

‘Blankaart’ [Cornelis, Bontekoe], *Gebruik en Mis-Bruik van de Thee. Mitsgaders een Verhandelinge wegens de Deugden en Kragten van de Taback. Door Cornelis Bontekoe, In zijn leven Raad en Lyf-Medicus van zijn Keurvorstelijke Doorluchtigheit van Brandenburg. Hier nevens een verhandelinge van de Coffee. Met des zelfs Krachten in gezonde, en ongezone* (The Hague: Pieter Hagen and Amsterdam: Jan ten Hoorn, 1686).

Blankaart, Steven, *Verhandelinge van de opvoedinge en ziekten der kinderen, Vertoonende op wat wyse de kinderen gezond kunnen blyven, en ziek zijnde, bequamelyk kunnen herstelt werden. Zeer nodig voor alle Huyshoudende lieden* (Reprint: Baarn: Hollandia, 1966 [Amsterdam: Hieronymus Sweerts, 1684])

Blankaart, Steven, *Nauwkeurige verhandelinge van de scheurbuik en des zelfs toevallen, Als*

ook een naakt vertoog wegens de fermentatie oft innerlijke beweging der lighamen, meest op de gronden van Des Cartes gebouwt (Amsterdam, 1684).

Blankaart, Steven, *S. Blankaarts Borgerlyke Tafel om lang Zonder Ziekten Gesond te Leven* (Reprint: Baarn: Hollandia, 1967 [Amsterdam: Jan ten Hoorn, 1683).

Boekzaal van Europe, ed. Pieter Rabus until 1702 [periodical, renamed, in 1692, *Tweemaandelijke Uittreksels*, after 1702, *Boekzael der Geleerde Werelt*] 57 vols. (Rotterdam, 1692-1702).

Bontekoe, Cornelis, *Grundsätze der Medizin und Chirurgie, Oder die Lehre vom Alkali und Acido durch Würckung der Fermentation und Effervescenz* [...] Bey dieser weitem Auflag mit Fleiß übersehen, von vielen Druckfehlern und sonst gebessert, geändert die Chirurgie betreffende denen Lehrenden und Anfängern der Lateinischen Sprach Unerfahrenen zum besten alle Terminos verteutschet Durch Johann Caspar Reiß (Augsburg: David Raymond Mertz, 1721).

Bontekoe, Cornelis, *Abhandlung von des Menschen Leben, Gesundheit, Kranckheit und Tode*, ed. Johann Daniel Longolius (Budißin, Leipzig: David Richter, 1719).

Bontekoe, Cornelis, *Nouveaux Élémens de Médecine, ou réflexions physiques sur les divers états de l'homme* (Paris, 1698).

Bontekoe, Cornelis, *Opus Posthumum sive Oeconomia animalis, das ist kurze und außführliche Beschreibung des ganzen menschlichen Leibes und desselben Würckungen* [transl.: H. H.] (Bremen: Philipp Gottfried Saurmann, 1692).

Bontekoe, Cornelis, *Grundsätze der Medizin oder die Lehre vom Alkali und Acido durch Würckung der Fermentation und Effervescenz* [transl.: H.H.] (Bremen, Frankfurt, Leipzig: Saurman, 1691).

Bontekoe, Cornelis, *Alle de philosophische, medicinale en chymische werken* [...] *behelsende een afwerp der ongefondeerde medicyne, chirurgie, en pharmacie der oude geneesheeren; neffens den opbouw van een ware philosophie, medicyne, en chemie, dienende om de gezondheid lang te bewaren* (Amsterdam: Jan ten Hoorn, 1689).

Bontekoe, Cornelis, *Verscheide tractaetjes, handelende van de voornaamste grondstukken om tot een waere kennisse der philosophie en medicynen te geraeken: zynde een Inleydingh tot de philosophie, metaphysica, logica, physica, als ook een nieuwe Leer*

vande physiologia, pathologia, ofte kennis vande siektens, nevens een Verhandeling van de geswellen (The Hague: Pieter Hagen, 1687).

Bontekoe, Cornelis, *Kurtze Abhandlung von dem menschlichen Leben, Gesundheit, Kranckheit und Tod* (Budissin: Friedrich Arnst, 1686).

Bontekoe, Cornelis, *Kurzer und fester Beweis dass es kein Annus Climactericus, oder kein Mordjahr gibt, und dass dieses im 63. oder 81. Lebensjahre des menschlichen Lebens nicht gefürchtet braucht zu werden* (Hamburg, 1685).

Bontekoe, Cornelis, 'Een brief aan Jan Frederik Swetsertje [...]', in *Een nieuw bewijs van d'onvermijdelijke noodzakelijkheid en grootste nuttigheid van een algemene twijfeling nevens de reden tegen alle redelose, en redenknebbelaars, al redenerende betwist-redent* (Amsterdam, 1685).

Bontekoe, Cornelis, *Korte Verhandeling van 's Menschen Leven, Gesondheit, Siekte, en Dood, begrepen in drie ledige reden, 1. Over 't Lighaam en sijne Werkingen in Gesondheit, 2. Over de Siekte en desselfs Oorsaken, 3. Over de middelen, om het Leven en de Gesondheit te bewaren en te verlengen; oversulx, om de meeste Siektens voor te komen, en d' Ouderdom een geruymen tyd af te weren, door Spyse, Drank, Slapen, Thee, Coffee, Chocolate, Tabak, en andere dingen, en Genees-middelen. Synde Een korte vervulling van 't Nieuw Gebouw der Chirurgie, van 't Tractaat van Thee, van de Reden over de Koortzen, en andere uytgegevene en beloofde Boeken. Als mede drie verhandelingen, 1. Over de Natuur, 2. Over de Bevinging, 3. Over de Sekerheit inde Genees-en Heelkunde*, (The Hague: Pieter Hagen, 1684).

Bontekoe, Cornelis, *Provocatie Aan alle Doctoren, Chirurgyens, Apothekers, en in 't besonder aan die van de Stadt Amsterdam* (Amsterdam, n. d. [?1681]).

Bontekoe, Cornelis, *Laatste reden van afscheid Over de Koortsen, uytgesproken den 15 July 1681, in 's-Gravenhage. Tot waarschouwing van alle die hun lijf en leven te lief hebben, om sig na de mode en in de form te laten pynigen, martelen en moorden met Aderlaten, Purgeren, Koeldranken en wat meerder is van diergelijke Moordgeweer, In de Handen van de Naam-doctoren* (The Hague: Pieter Hagen, 1681).

Bontekoe, Cornelis, *Vervolg van het eerste Deel van het Nieuw Gebouw der Chirurgie Of Heel-Konst* (The Hague: Pieter Hagen, 1681).

Bontekoe, Cornelis, *Nieuw gebouw van de chirurgie of heel-konst stuks-gewijze opgetimmerd* (The Hague: Pieter Hagen, 1680-1).

Bontekoe, Cornelis, *Brief Aan Johan Frederik Swetser, Gesegt Dr. Helvetius [...] Tot een korte Apologie voor den Grote Philosoph Renatus Descartes, En sijne rechtsinnige navolgers [...] Tot hun onschuld groffelijk uytgekreten, en met den heillosen Spinoza, en de sijne, als mede met alle Keters en Dwaal-geesten, van Socinianen, Arminianen, Kwakers, Mennonisten, en wat dies meer is, geheel en al onregtmatig sonder eenige reden en de minste schijn van bewijs te samen gekoppeld worden* (The Hague: Pieter Hagen, 1680).

Bontekoe, Cornelis, *Tractaat van het Excellenste Kruid THEE, 't Welk vertoond het regte gebruyk, en die groote Kragten van 't selve in Gesondheyd, en Siekten: Benevens een Kort Discours Op Het Leven, de Siekte, en de Dood: mitsgaders op de Medicyne van dese tijd. Ten dienste van die gene, die lust hebben, om Langer, Gesonder, en Wijzer te leven*, 2nd edn. (The Hague: Pieter Hagen, 1679).

Carl, Johann Samuel, *Von der Diaet vor Gesunde und Krancke: zu gründlicher Anweisung, Wie solche auf jedes besonderen Zustand und Kranckheit wohl einzurichten. Aller göttlichen und natürlichen Ordnung gemäß, als ein sichere, richtiger und einfältiger Weg zu Erhaltung des Lebens und Gesundheit vorgestellet*, 3rd edn. (Büdingen, 1728).

Catalogus Bibliothecae Gerh. V. Maastricht (Amsterdam, 1704).

Catalogus Universalis, Hoc est: Designatio Omnium Librorum, Qui hisce Nundis Vernalibus [...] Francofurtensibus Anni [...], vel novi, vel emendatiores & auctiores prodierunt. Das ist: Verzeichniß aller Bücher, so zu Franckfurt in der Fasten-Messe, auch Leipziger Oster-Messe [oder in der Herbst-Messe, auch Leipziger Michaelis-Messe] des ietzigen [...] Jahres, entweder ganz neu, oder sonsten verbessert, oder auff's neue wieder auffgeleget und gedrucket worden sind (Leipzig: Joh. Grossen 1680-1750).

Chamberlayne, John, *The Natural History of Coffee, Thee, Chocolate, Tobacco In four several Sections; With a Tract of Elder and Juniper-Berries, Shewing how Useful they may be in Our Coffee-Houses: And also the way of making MUM With some Remarks upon that Liquor. Collected from the Writings of the best Physicians and Modern Travellers* (London, 1682).

Cohausen, Johann Heinrich, *Neothea, Oder Neu-angerichtete Medicinische Thee-Tafel, Auff*

welcher Fürtreffliche, so einfältig- als künstlich zusammen gesetzte, theils aus einheimisch-theils ausländischen Kräutern und Gewächsen bestehende Kräuter-Thee Denen Liebhabern der Gesundheit und langen Lebens auffgetragen und praesentiret werden (Osnabrück, 1716).

Daelmans, Aegidius, *Neue abgefaste Heyl-Kunst auff dem Grund von Alkali und Acidi erbauet* (Frankfurt/Oder, 1694).

Daelmans, Aegidius, *De nieuw hervormde geneeskunst: gebouwt op de gronden van het alcali en acidum* (Amsterdam, 1687).

- 3rd edn. (Amsterdam, Jan ten Hoorn, 1694).

- 6th edn. (Amsterdam: Jan ten Hoorn, 1720).

Deutsche Acta Eruditorum, Oder Geschichte der Gelehrten, Welche den gegenwärtigen Zustand der Literatur in Europa begreifen [periodical] 20 vols. (Leipzig, 1712-39).

[Anonym.] *Dialogue van een Groote Thee en Tobacq-suyper over het wonderlijck hart gevecht Voorgevallen in den Haag Tusschen Twee moedige Hanen en Schermers, Johan Frederiq Swetser Alias Doctor Helvetius, En Mennoniste Kees Alias Dr. Cornelis Bontekoe* (The Hague, 1680).

Dittmar, Heinrich, *Wunderliche und wahrhaftige Gesichte Philanders von Sittenwald, d. i. Satirische Schriften von Johann Michael Moscherosch* (Berlin, 1830).

Duncan, Daniel, *Wholesome Advice Against the Abuse of hot Liquors, Particularly Of Coffee, Chocolate, Tea, Brandy And Strong-Water. With Directions To know what Constitution they Suit, and when the Use of them may be Profitable or Hurtful* (London, 1706).

Eloy, Nicolas François Joseph, *Dictionaire Historique de la Médecine Ancienne et Moderne* 2 vols. (Reprint: Brussels, 1973 [1778])

Elsholtz, Joannes, *Diaeticon: Das ist Newes Tisch-Buch Oder Unterricht von der Erhaltung guter Gesundheit durch eine ordentliche Diät, und insonderheit durch rechtmäßigen Gebrauch der Speisen und des Geträncks* (Cölln an der Spree, 1682).

Ettmüller, Michael, *Kurtzer Begriff der ganzen Arzney-Kunst, Aus seinen medicinischen Schrifften zusammen gezogen [...]* (Leipzig, 1717).

Endter, Wolfgang Mauritius, *Catalogus Librorum Medico-Physico-Mathematicorum* (Nürnberg, 1695).

Ettner, Johann Christoph [Pseud.], *Des Getreuen Eckarths Medicinischer Maul-Affe Oder der Entlarvte Marçkt-Schreyer, In welchen vornehmlich der Marcktschreyer und Quacksalber Boßheit und Betrügereyen, wie dieselben zu erkennen und zu meiden* (Frankfurt, Leipzig, 1720).

Fechner, Gustav Theodor, *Das Hauslexikon, Vollständiges Handbuch praktischer Lebenskenntnisse für alle Stände* (Leipzig, 1834).

[Anonym.] *De Gedebaucheerde En Betoverde Koffy-en Thee-Weereld, Behelzende een meenigte van aardige Voorvallen, welke zich sedert weinig tydts tot Amsterdam, Rotterdam, in den Haag, te Utrecht, en de beygelegene Plaatsen, op de Koffy- en Thee-gezelschapjes, zo onder de Getrouwden als Ongetrouwden, hebben toegedraagen, met alle de debauches en ongeregeldheden, welke onder pretext van deeze laffe Dranken worden gepleegd: Benevens een uitrekening van de Jaarlykse schade, welke door dit Koffy-en Théé-gebruik, als mede door de Pasteleinen, en al de verdere Poppe-kraam, daar toe behoorende word veroorzaakt* (Amsterdam: Timotheous ten Hoorn, 1701).

Gehema, Janusz Abraham, *Zwey und zwanzigjährige Bewährte ohnfehlbare Fieber-Cur, Ohne Aderlassen, purgiren, vomiren, schwitzen, und Juleppen, alle Febres intermittentes oder so genante abgehende kalte Fieber (sie mögen seyn Quotidianæ, Tertianæ, Quartanæ, oder gedoppelte) und ohne Sorge einziger Recidivæ und anderer gefährlichen Zufällen, geschwinde, sicher, angenehm und beständig zu curiren* (Berlin: Witwe Salfeld, 1702).

Gehema, Janusz Abraham, *Der Richtige und sichere Wegweiser zur Beständigen Gesundheit und einem Langen Leben* (Alten Stettin, 1691).

Gehema, Janusz Abraham, *Der krancke Soldat, bittende Daß er hinfuehro besser möge conserviret, mitleidiger tractiret und vorsichtiger curiret werden* (Stettin: Johann Adam Plener 1690).

Gehema, Janusz Abraham, *Vertheidigter Reformirter Apothecker, wider Anonymum Grobianum oder den verummerten Ninorigum Schadgehemium* (Freystadt, 1690).

Gehema, Janusz Abraham, *Die Sorgfältige und Gewissenhaffte Säug-Amme, Fürstellende die Mißbräuche, welcher man sich bißhero bey säugenden Kinder bedienet, Und anweisende, wie solche nach den besten Medicinischen principiis, biß zur*

Abwehnung von der Mutter-Brüsten zu fester Speise und Getränke zu verpflegen seyn (Berlin: Rupert Völckers, 1689).

Gehema, Janusz Abraham, *Die Beste Zeitvertreib* (Bremen, 1689).

Gehema, Janusz Abraham, *Diaetetica Rationalis, das ist: Auff unlaeugbahren festen principiis, gesunder Vernunft und wahren experience wolgegründete Lebens-Ordnung, Wodurch ein jeder Mensch in seinem Stande seine Gesundheit bewahren, und ein von mancherley beschweren befreytes Leben hie auff Erden fuehren koenne* (Bremen: 1688).

Gehema, Janusz Abraham, *Grausame Medicinische Mord-Mittel, Aderlasse, Schröpfen, Purgiren, Clystiren, Juleppen und Ohnmacht-machende Hertzstärkungen Wodurch Unbedachtsame Genees- und Heilmeister (nicht rechtschaffene Practici) so viel tausend unschuldige Menschen jämmerlich vom Leben zum Tode helfen. Stellet allen vernünftigen Leuten gewissenhaftig für Augen [...]*(Lindau: Antiqua-Verlag, 1980 [Bremen, Hermann Brauer, 1688]).

Gehema, Janusz Abraham, *Der Reformirte Apothecker fürstellende ein ohnmaßgebliches Project, wie und welcher Gestalt die heutige Apothecken billich zu reformiren, und nach einer bey allen verständigen und gewissenhaften Medicis nunmehr angenommenen rationalen medendi methodo einzurichten weren* (Bremen, 1688).

Gehema, Janusz Abraham, *Officirer Feld-Apotheke, woraus ein jeder Officirer [...] im Nothfall bey allen Kranckheiten und Blessuren [...] sich selbst curiren könne* (Berlin: Rupert Völcker, 1688).

Gehema, Janusz Abraham, *Thee-Geträncke Curiret, verursacht aber nicht Die Wassersucht* (Berlin, 1687).

Gehema, Janusz Abraham, *Wettstreit des Chinesischen Thea mit dem warmen Wasser Calida, Worauff das hocherfahrne Podagra den Endspruch giebet* (Berlin, 1686).

Gehema, *Edler Thee-Tranck, Ein Bewehrtes Mittel zum gesunden und langen Leben* (Bremen, 1686).

Gehema, Janusz Abraham, *Wohlversehener Feld-Medicus, Begreiffende die Misbräuche, welche bißhero so wol in Anstellung der Hn. Feld-Medicorum als Feldscherer, wie auch bei Einrichtung der also genannten Feldkasten vorgegangen sind. Sambt Einem*

unmaßgeblichen wohlmeinenden Project, wie und auff was weise solches alles könne remidiret werden. (Hamburg: Gottfried Schulzen, 1684).

Geuder, M. F., *Heilsame Medicinische Lebens-Mittel Denen grausamen Medicinischen Mord-Mitteln Herrn D. Jan Abrah. à Gehema Entgegen gesetzt. Oder gründlicher Bericht Von Denen von Hn. D. Gehema Sehr verschreyten und verworffenen Mitteln. In welchem deren Nothwendigkeit, rechter Gebrauch, und darauß erwachsender Nutzen vorgestellt* (Lindau: Antiqua Verlag, 1980 [Stuttgart: Georg Wilhelm Kühn, 1689]).

Geulincx, Arnold, *Van de hoofddeugden. De eerste tuchtverhandeling*, ed. Cornelis Verhoeven (ed.), (Baarn, 1986 [1667]).

H. J. G., *Das beliebte und gelobte Kräutlein Toback, oder allerhand auserlesene historische Merckwürdigkeiten vom Ursprung, Beschaffenheit, Würckung [...] des Tobacks, aus berühmter Männer Schrifften gesammelt* (Chemnitz, 1719).

Harmes, Martin, *Diatriba Inauguralis De Acidularum usu Earundem que vero operandi* (Marburg, 1685).

Hausen, Carl Renatus, *Geschichte der Universität und Stadt Frankfurt an der Oder* (Frankfurt/ Oder, 1800).

Heinsius, Nicolaas, *Der Gemarterte Venus-Priester, Oder eine genaue Verhandlung von der Venus Kranckheit Begreifende deßen erste principien, und verderblichen Fortgang in dem Geblüthe, als auch wie schädlich das Salivieren, unmäßige Schwitzen, und offtmähliges Purgiren in dieser Kranckheit sey* (Amsterdam, Frankfurt, Leipzig, 1711).

Heinsius, Nicolaas, *Zeug-Hauß der Gesundheit bestehend in lauter fürtrefflichen Geheimnüssen* 3rd edn. (Amsterdam, Danzig, Leipzig, 1707).

Heinsius, Nicolaas, *Übel-vexirter und wohl-soulagirter Podagrist, Oder Curiöser Tractat Vom Podagra Und der allgemeinen Gicht, Worinnen Dieser schmerzlichen Kranckheiten Natur und Cur Mit vielen bewährten Recepten und entdeckten Geheimnissen gründlich gewiesen wird*, 2nd edn. (Frankfurt, Leipzig: Christoph Hülse, 1703).

Heinsius, Nicolaas, *Warhafftiger Erweisz, dasz die so genannte Milch-Cur, in Scharbock,*

Gicht Podagra und allen andern aus dem Sauer herkommenden Kranckheiten ueberaus schädlich sey. Nebenst einer Anweisung durch welche Arzneyen und auf was Art dieselben nach Anleitung des Cartesii können curiret werden. Ueber Dr. Stephan Blancards gerühmten Milch-Nutz von Johann Schreyer (Leipzig, 1694).

Heister, Lorenz, *Laurentii Heisters Practisches Medicinisches Handbuch, Oder Kurzer doch hinlänglicher Unterricht Wie man die innerlichen Kranckheiten am besten curiren soll, Nebst einer Abhandlung von der Vortrefflichkeit der mechanischen Artzney-Lehre*, new improved edn. (Leipzig, 1759 [1744]).

Heister, Lorenz, *Laurentii Heisters Chirurgie, In welcher Alles, was zur Wund-Artzney gehöret, Nach der neuesten und besten Art gründlich abgehandelt [...]*, 2nd enlarged and improved edn. (Nürnberg, 1724 [1719]).

Hendreich, Christoph, *Pandectae Brandenburgicae* (Berlin, 1699).

Heumann, Christoph August, *Acta Philosophorum, Das ist Gründliche Nachrichten aus der Historia Philosophica, Nebst beygefügtten Urtheilen von denen dahin gehörigen alten und neuen Büchern* (Bristol, 1997 [1715-26]).

Hoffmann, Friedrich, *Eigentliche Untersuchung Der Säure und des Schleimes Worinnen Die von denen hochberühmten Doct. Bontekoe und Blanckard und andern mehr bißhero auffgeführte Lehr-Sätze gründlich widerleget sind, und hingegen behauptet wird Daß nicht alle Krankheiten und Gebrechen Menschliches Leibes von Saur und Schleim herrühren* (Halle, 1696).

Horlacher, Conrad, *Die höchstschädliche Würckung Des Aderlassens und Purgirens, Mit zehen Beweiß-Gründen und Beantwortung der vornehmsten Einwendungen auch Kürzlicher Betrachtung der von D. Geudern dem D. Gehema entgegen gesetzten Apologie (in welcher die Purgir-Mittel und das Aderlassen vergebens gerettet* (Frankfurt, Leipzig [Ulm]: Georg Wilhelm Kühn, 1691).

Jablonski, Johann Theodor, *Allgemeines Lexicon der Künste und Wissenschaften* (Königsberg, Leipzig, 1748).

Jöcher, Christian Gottlieb, *Allgemeines Gelehrten Lexicon*, 4 vols. (Leipzig, 1750-51).
Journal des Savans [periodical] (Paris, 1680-1750).

Jungken, Johann Helfrich, *Wohlunterrichteter Sorgfältiger Medicus, welcher nach denen*

Grund-Reguln so aus der heutigen Anatomie und Chimie hergenommen, alle Innere Theile des Menschlichen Leibes beschreibet, und dessen zufällige Kranckheiten getreulich abhandelt, dergestalt Daß ein jeder, der vor seine Gesundheit Sorge trägt, so wol seine eigene Constitution daraus erkennen, als In anfallenden Kranckheiten sich selbst rathen und helffen kan (Nürnberg: Johann Friedrich Rüdiger, 1725).

Jungken, Johann Helfric[h], *Chirurgica Manualis, Oder kurtzer doch vollkommener Begriff derer zu der Chirurgie in speciè gehörigen Operationen Oder Hand-Arbeiten: Wie solche einem rechtschaffenen Chirurgo experimentaliter zu erlernen und zu wissen absolutè nöthig sind*, 4th edition (Nürnberg, 1718).

[Anonym.] *Kaffe- und The-Logia, oder Kurze Anzeige und Beschreibung dieser Geträncke: Worinnen enthalten, wie die Liebhaber des Caffee- und The-Trinckens sich aufführen, und ihre Wasser-Debauchen auff den Caffee-Häusern verrichten* (no place of publication, ca. 1690).

Kestner, Christian Wilhelm, *Medizinisches Gelehrtenlexicon: Darinnen die Leben der berühmtesten Aerzte, sammt deren wichtigsten Schriften, sonderbaresten Entdeckungen und merkwürdigsten Streitigkeiten [...] beschrieben worden* (Jena, 1740).

[Dutch Anonym.] *Klarer und nacketer Beweiß von dem grossen Mißbrauch des Frembden und ausheimischen Thees und Coffees; worinnen unwidersprechlich erwiesen wird, daß sie nicht zur Gesundheit, sondern vielmehr zu Kranckheiten und Verkürzung des menschlichen Lebens dienen, auch folglich derer Gebrauch zu grossen Nachtheil eingeführet sey*. [German transl.: in Johann Peter Albrecht, *Klar-Entdeckte Unschuld* [...]] (Bremen, 1696).

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[Olinde pseud.] *Gründliche Untersuchung Des so genannten Anmuthigen Beweises Mad. Leucorandens Daß ein honettes Frauenzimmer ohne einige Verletzung ihrer Renoméé bissweilen bey den Caffée-Schmäusschen erscheinen könne, Kürzlich entworfen von Olinden* (Frauenburg, [? Berlin] 1715).

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- [Anonym.] *Die verschlemmerte und bezauberte Coffe-und Thee-Welt, Welche eine Menge artiger Begebenheiten enthält, so sich seit kurzem zu Amsterdam, Rotterdam, in dem Haage, zu Utrecht, und in den benachbarten Orten, sowohl unter verheyrahteten als*

ledigen Personen, zugetragen: Mit allen denjenigen Debauchen und Ausschweifungen, so unter dem Prätext dieser fahlen Geträncke ausgeübet werden. Sammt einem Auszug des Jährlichen Schadens, der durch solchen Coffe- und Thee-Gebrauch, als auch durch das Porcellan-Geräthe, und allem übrigen darzu gehörigen Poppen-Kram verursacht wird (Schwabach, 1737).

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